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The Journal of SOCIAL, POLITICAL AND ECONOMIC STUDIES

Roger Pearson
General Editor
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The Current Status of China's Military Space Program

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Engelwood, Colorado

This article analyses China's current military space program. Many of China's space programs are deemed to be civilian, but have dual use, especially with regard to military capabilities. The relevance of China's space assets to the military sphere is analyzed. China's distinctive path to space development that includes the military is highlighted with its international cooperation. Collaborating countries include the former Soviet Union, now Russia along with its republics, the United States, Canada, the United Kingdom, Germany and Brazil. China's military space development relies heavily on cooperation with other countries, and in particular on the United States. When the latter became public knowledge, it caused a political dispute which led to a Congressional investigation, especially in connection with space launch market cooperation. China's prime interest at this time is in developing anti-satellite weapons as a leveler against a potential adversary's space assets.

Key Words: China's Space Program, satellites, anti-satellite weapons, remote sensing, communications, export of U.S. space technology.

Current PRC Space Forces

The focus on economic development whilst improving military technologies is particularly evident in the space sector. The current satellites are dominated by dual use systems, such as meteorological, communications and remote sensing satellites.[2] Equally important is China's policy of acquiring technology through cooperation with other countries, along with direct purchase. This has been done in the field since it is hard to distinguish civilian and military space systems. The relative success of China in this regard means that it is likely that it will continue to do this in the future in order to broaden its development of its space systems. This will have corresponding benefits to the military space sector. The uses China would put its space forces to in the event of a war would almost definitely be satellite imagery to monitor Taiwanese defence developments. Indeed there is evidence to suggest that the PRC does this already with its reconnaissance satellite.[3]

The Chinese seem to be developing capabilities to counter overhead

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[1] Address for correspondence: jamhhughes@aol.com

[2] "Dragons in Orbit? Analysing the Chinese Approach to Space", *National Defence University*, Washington D.C. [accessed August 4, 2001]:
http://www.ndu.edu/inss/China_Center/paper10.htm, p. 5.

[3] ibid., p. 6

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satellite reconnaissance. They have developed through practice a method which a division combines hiding, lying low, and drilling, with the tactics of moving, deceiving and harassing. These actions are sufficient that they are able to mask detection from space assets along with aircraft.[4] However, if these claims are true this means that China has the ability to task space assets to attempt detection of troops. Also, it must have trained imagery analysts in order to examine the photographs to enable them to be able to claim that they are capable of avoiding detection.

China is expected to develop a new radar remote sensing satellite with an anticipated launch date of 2002. This new satellite would have both civil and military uses, and would be comparable to Canada's Radarsat and the European Space Agency's ERS 1-2 vehicles.[5] In 1995 China's civilian space spending was approximately $1.38 billion, with around 200,000 people employed in both civil and military space programs.[6] These figures are not comparable to Western budgets and work force levels since Chinese labour costs are minimal and does not operate a market economy.

China in 1996 began examining the feasibility of establishing a satellite navigation and position system. The Secretary General of the Science and Technology Commission, at the Chinese Academy of Space Technology declared in a statement that, "The development of an autonomous satellite navigation system is urgent. The national defence construction departments also urgently require applied satellites." [7] This system would consist of a twin-satellite navigation and positioning system comprised of two geostationary orbit satellites.[8] This proposal has sometimes been referred to as Twin Star,[9] also known as the Beidou Navigation System. The benefits of such a satellite system would have both civilian and military applications. On October 31, 2000 China

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[4]ibid., p. 9.

[5] Craig Covault, "China Seeks Cooperation, Airs New Space Strategy", *Aviation Week & Space Technology*, October 14, 1996, p. 31.

[6]Ibid., p. 32.

[7] Zhu Yilin, "Fast-Track Development of Space Technology in China", *Space Policy*, May 1996, p. 139.

[8]Zhu Yilin & Xu Fuxiang, "Status and prospects of China's space programme", *Space Policy*, February 1997, pp. 73-74.

[9] Brian Harvey, *The Chinese Space Programme : From Cooperation to Future Capabilities*, (Praxis Publishing: Chichester, 1998) p. 153.

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launched an indigenous navigation position satellite.[10] The satellite was developed under the auspices of the Research Institute of Space Technology and was launched from the Xichang Launch Centre. The second satellite of the system was launched on December 21, 2000.[11] The follow-on system under design comprises of four satellites in geosynchronous orbit.[12] However, unlike GLONASS and GPS these geosynchronous satellites only provide regional navigation information. They are unlikely to offer precise enough information for use on missile systems.[13] The Chinese Aerospace Corporation (CASC) are examining two designs to provide a more global navigations system. One such design proposes a design of five satellites in five orbital planes at an inclination of 43.7°, whereas another envisages seven satellites in seven orbital planes at an inclination of 61.8°.[14]

A new generation of communication satellites the Dongfanghong 3 was launched in November 1994 but failed after it had attained orbit. A replacement was launched in 1997.[15] The Asiasat and APStar series of satellites are owned by Asia Satellite Telecommunications Company and Asia Pacific Telecommunications Satellite Company respectively. These two companies are partially owned by Chinese entities and are based in Hong Kong.[16] China has additionally purchased communications satellites abroad to service its domestic needs. The first successful launch of such a communication's satellite, ChinaStar 1 (Zhongwei 1) was manufactured by Lockheed Martin on May 30, 1998. Prior to that on August 18, 1996 a communication's satellite manufactured by Hughes Space and Communications Company failed to reach its intended orbit due to a third stage failure. The first European built satellite, SinoSat-1 was built for the German-Chinese consortium EuraSpace with the French company Aerospatiale as the prime contractor. The SinoSat-1 is managed by the Chinese company Sino

[10] "China Launches Maiden Navigation Positioning Satellite", *SpaceDaily*, October 31, 2000, http://www.spacedaily.com/news/001031025809.g4qwq3.ac.html [accessed]. See also Cheng Ho, "First Chinese Navsat In Operation", *SpaceDaily*, November 22, 2000 [accessed] http://www.spacedaily.com/news/china-00zzr.html

[11] "China Launches Second Navigation Positioning Satellite", *SpaceDaily*, December 21, 200, *http://www.spacedaily.com/news/001221032826.9hwr6xru.html* [accessed].

[12] Mark A. Stokes, "China's Strategic Modernisation: Implications for the United States", *Strategic Studies Institute*, (Pennsylvania: US Army War College, September 1999), p. 181.

[13] Ibid., p. 182.

[14] Ibid.

[15] Marcia S. Smith, op. cit., p. 8.

[16] Ibid.

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Satellite Communications Company and was launched in July 1998.[17]

In 1998 China had amassed eleven communication satellites but had allotted only limited channels to the PLA.[18] To rectify this situation a network of defence satellite communications has been proposed. The network would emphasise developing small mobile stations. This would not only expand the strategic communication channels and reception points but the mobility of the stations would allow them to be deployed to sensitive areas as part of the rapid response units to meet that requirement.[19] The Feng Huo-1 (FH-1) satellite was launched in January 2000 the first of several military communication satellites that are comprised of the Qu Dian command, control, communications, computer, and intelligence C^4I system.[20] This network will PLA commanders to communicate with their in theater forces in near real time.

China has an interest in land remote sensing satellites. The term remote sensing refers to any sensing of the Earth and its atmosphere including weather satellites. An imagery satellite requires the same basic technical characteristics for civilian purposes as it does for military uses. In 1981 with the approval of the State Council the National Remote Sensing Centre (NRSC) was founded to develop and apply remote sensing.[21] China purchased a Landsat receiving station from System and Applied Science Corporation in the United States in 1986[22] and have subsequently upgraded it several times in order to enable receipt of imagery from other satellites. This receiving station is located in Beijing. In 1989 the station covered 80 per cent of China's land area with an antenna elevation above 3^o.[23]

In the late 1980s China began to consider developing its own Earth observation satellites that could be used for both civilian and military meteorological purposes. As part of the Seventh Five-Year Plan the Feng Yun 1-1 (FY-1) designed to operate in polar orbit was launched on

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[17] Ibid.

[18] You Ji, *The Armed Forces of China*, (I.B. Taurus: New York, 1999), p. 77.

[19] Ibid.

[20] Colonel David J. Thompson, "The Role of China's Space Programme in its National Development Strategy", *Maxwell Paper No. 24*, (Maxwell Air Force Base, Alabama, August 2001), pp. 10-11.

[21] He Changchui, "The Development of Remote Sensing in China", *Space Policy*, February 1989, p. 65.

[22] Ibid., p. 70.

[23] Ibid.

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September 6, 1988 and the Feng Yun 1-2 on September 3, 1990.[24] These satellites were set at an orbital altitude of 900km and an inclination of 99°, in order to achieve optimal observation of China's land and ocean. The remote sensing capabilities include a multichannel scanning radiometer that has four visible bands including one infrared band, along with both analog and digital data.[25] The analog data is transmitted to Earth through VHF and the digital in S band. The data acquisition systems, in particular the 2-channel infrared scanner (DS-1230), multispectral scanner (DS-1260), metric cameras (RMK, RC-10) and synthetic aperture radar system have been imported.[26] Two satellites were imported from Spar Aerospace of Canada.[27] The satellites not only provide imagery in a different spectrum, but a radar satellite will enable all-weather, around the clock coverage. Synthetic aperture radars can be used for digital terrain mapping, surveillance, and target acquisition, especially with regard over oceans.[28] However, the FY1-1 satellite operated for only 39 days of its planned one year and FY 1-2 lost attitude control five months into its orbital life and eventually was lost due to radiation.[29] The follow on series of satellites the Feng Yun 2 were designed to operate in geosynchronous orbit. The first was lost due to an explosion during ground processing, however, the second, FY-2B was successfully placed into orbit on June 10, 1997.[30] Another earth observation satellite, Feng Yun 1C was launched on May 10, 1999 in a sun-synchronous orbit.[31] The purpose of these satellites was announced by the Chinese for environmental disaster monitoring, however one of the satellites was built for the Commission on Science, Technology, and Industry for National Defence.[32]

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[24] Brian Harvery, p. 168.

[25] He Changchui, p. 71.

[26] Ibid., p. 70.

[27] Wendy Frieman, "The Understated Revolution in Chinese Science and Technology", in James R. Lilley & Daria Shambaugh, eds., *China's Military Faces The Future*, (American Enterprise Institute for Public Policy Research: Washington D.C., 1999), p. 255.

[28] Mark Hewish, "The Sensor of Choice: Synthetic Aperture Radar", *Jane's International Defence Review*, May 1997, p. 34.

[29] "The Final Report of the Select Committee on US National Security and Military/Commercial Concerns with the People's Republic of China" Subsection "PRC Missile and Space Forces":
http://www.cnn.com/ALLPOLITICS/resources/1999/cox.report/missiles/page1.html

[30] Ibid.

[31] *Aviation Week & Space Technology*, January 17, 2000, p. 159.

[32] Wendy Frieman, p. 255.

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China's International Cooperation & its Current Space Forces

China is involved in cooperation with Brazil to build two remote sensing satellites, the China-Brazil Earth Resources Satellite (CBERS-1 and 2). This project began on September 4, 1988 and was signed in Beijing by three representatives from the Chinese Academy of Space Technology (CAST) and three from Brazilian Space Research Institute (INPE). The ratio of responsibility of the project is split 70 per cent of the costs for China, which amounts to around $150 million and 30 per cent for Brazil.[33] The remote sensing system was designed to carry three imaging systems including a charge-coupled device (CCD) that will provide 20 metres resolution which could be useful for both civilian and military purposes.[34] The CBERS project enabled China to acquire from Brazil the CCD device chamber, computers and test systems,[35] along with the wide field imager.[36] China provides the bus, panchromatic/multispectral CCD cameras and IR sensor.[37] Along with the other reasons for cooperating with Brazil, such as reducing development time and financial costs the most important was that Brazil could act as a conduit to enable China to acquire technological know how from other countries which China could not otherwise obtain.[38] In order to alleviate concerns that Brazil and China would cooperate in the future on military space assets, Brazil on February 10, 1994 agreed to adhere to the rules of the MTCR.[39]

The initial launch date for CBERS-1 was scheduled for December 1992, however this date was to prove elusive. This slippage is due to the fact that costs began to rise and the project did not receive the highest priority within the Brazilian government.[40] Also, the Taiyuan Satellite Launch Centre does not usually function at that time of the year.[41] The CBERS-1, (known as Zi Yuan-1, ZY-1) was launched on October 14,

[33] Jose Monserrat Filho, "Brazilian-Chinese Space Cooperation: An Analysis", *Space Policy*, May 1997, p. 160.

[34] Marcia S. Smith, p. 9.

[35] Jose Monserrat Filho, "Brazilian-Chinese Space Cooperation: An Analysis", *Space Policy*, May 1997, p. 165.

[36] Michael A. Taverna, "Pacts With China, Italy Spotlight Latin American Space Ambitions", *Aviation Week & Space Technology*, October 9, 2000, p. 125.

[37] Ibid.

[38] Jose Monserrat Filho, p. 162.

[39] Jose Monserrat Filho, p. 168.

[40] Jose Monserrat Filho, p. 164.

[41] Jose Monserrat Filho, "Brazilian-Chinese Space Cooperation: An Analysis", *Space Policy*, May 1997, p. 160.

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1999 and has a lifespan of two years, although it is possible to extend this to three.[42] The data from the satellites is sent to the three ground stations in China. CBERS-2 was originally scheduled for launch in October, 2001, but this date has slipped to this year.[43] The onboard camera permits up to 15 minutes of CCD camera data to be stored for retransmission.[44] A memorandum between Brazil and China concluded on September 20, 2000 added two further satellites to the two already contained in the agreement. These additional satellites are to have improved spatial resolution down to 5 metres, and also include greater redundancy in order to prevent electronic failure which occurred during the CBERS-1 six months into its operation.[45] These satellites have an anticipated launch date of 2003, 4 and 2006 respectively.

The HY-1 is an oceanography satellite equipped with a colour ocean scanner and set to be launched in the year 2002.[46] There are two more weather (oceansats) satellites to be added in 2003-4. The combination of the FY, HY and CBERS satellite constellation will have an average revisit time of 12 hours.

In October 1992, China launched a FSW-1 recoverable earth imaging satellite from the Jiuquan launch site in north central China. The satellite which was placed into orbit aboard a Long March 2C returned its nose mounted re-entry vehicle to earth after around two weeks. The film camera imaging system operated by the FSW-1 has both Earth resources and military reconnaissance capability.[47] The follow on series FSW-2 has a resolution of 10 metres, and can handle 2000 metres of film. The first was launched in August 1992, with others following in

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[42] Michael A. Taverna, "Pacts With China, Italy Spotlight Latin American Space Ambitions", *Aviation Week & Space Technology*, October 9, 2000, p. 125. See also "Defence Department Details Chinese Military Space Capabilities and Plans", *SpaceDaily*, June 28, 2000, http://www.spacedaily.com/news-milspace-00a.html [accessed].

[43] Michael A. Taverna, "India, China To Expand Earth-Observing Nets", *Aviation Week & Space Technology*, October 29, 2001, p. 88.

[44] Michael A. Taverna, "Pacts With China, Italy Spotlight Latin American Space Ambitions", *Aviation Week & Space Technology*, October 9, 2000, p. 125.

[45] Michael A. Taverna, "Pacts With China, Italy Spotlight Latin American Space Ambitions", *Aviation Week & Space Technology*, October 9, 2000, p. 125. See also Wei Long, "China, Brazil Continue Remote Sensing", *Space Daily*, September 28, 2000, [accessed] http://www.spacedaily.com/news/china-00zzf.html.

[46] Michael A. Taverna, "India, China To Expand Earth-Observing Nets", *Aviation Week & Space Technology*, October 29, 2001, p. 88.

[47] Craig Covault, "Chinese Space Programme Sets Aggressive Pace", *Aviation Week & Space Technology*, October 5, 1992, p. 49.

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1994 and 1996.[48] This series of satellite has an advanced manoeurvring capability. The FSW-3 which is anticipated will have a recoverable system with a one metre resolution.[49]

In 1994 China Aerospace Company and Germany's Deutsche Aerospace (now DASA) formed a joint venture, Euraspace to build remote sensing and communications satellites. The first communications satellite as mentioned previously, was launched in July 1998. Another joint venture was initiated in 1996 to build satellite electronics and ground facilities. This venture was between China's Xi'an Institute of Space Radio Technology and Canada's Com Dev International, and was subsequently called Com Dev Xi'an.

In May 1990, Chinese and Russian industrial representatives signed an agreement to cooperate on 10 projects together. These areas of space cooperation are: satellite navigation; space surveillance; propulsion; satellite communications; joint design efforts; material; intelligence sharing; scientific personnel exchanges; and space systems testing.[50] China and Russia in 1994 signed a protocol in 1994 for broad space cooperation. The areas reportedly of interest in cooperation were related to China's interest in human spaceflight. In April 1996 President Yeltsin signed a joint understanding on space cooperation with Chinese space officials that included training Chinese specialists at Russia's cosmonaut training facilities at Star City. By the end of 1996 the Russian Space Agency was close to signing contracts with China concerning commercial spacecraft launches, although the status of the agreement is unclear.[51] Similarly details regarding a framework agreement between China and Kazakhstan in 1998 remain elusive. The assistance from Russia and its republics provides the greatest source of space cooperation for China, more than the other countries which China is in partnership with.

China's cooperation with the United States on a governmental level in the area of satellite technology has been chequered. The first delegation of space officials from China to visit NASA was in December 1978. The priority areas the Chinese identified were the purchase of a

[48] Mark A. Stokes, "China's Strategic Modernisation: Implications for the United States", *Strategic Studies Institute*, (Pennsylvania: US Army War College, September 1999), p. 35.

[49] Ibid., p. 36.

[50] Mark A. Stokes, "China's Strategic Modernisation: Implications for the United States", *Strategic Studies Institute*, (Pennsylvania: US Army War College, September 1999), p. 184.

[51] Marcia S. Smith, *China's Space Program: A Brief Overview Including Commerical Launches of U.S.-Built Satellites*, September 3, 1998, p. 10.

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domestic communications satellite system and access to NASA's earth resource sensing satellites.[52] The Chinese announced its intent to market its Long March 2C and 3 satellite launches on the international market in 1985.[53] Since China Great Wall Industries began offering its services, which offers a satellite launch 30 months after the initial contract has been signed,[54] the Chinese government has had to focus its attention on its relations with the United States to this end. This situation has arisen since virtually all commercial communication satellites are manufactured by U.S. companies or include U.S. components which has meant that export licenses are required. The importance to China of the development of its satellite launcher service can be seen from the following quote:

> China is the third country in the world to offer an international satellite launching service. China's satellite industry is important for the country as it seeks to build international cooperation and new patterns of development.[55]

The first export license requests were made to the State Department in 1988 for two Australian satellites, Aussat 1 and 2 built by Hughes Space and Communications Company and one satellite Asiasat-1 based in Hong Kong. The Reagan Administration approved the export of the three satellites in September 1988, on the proviso that China signed three international treaties: the liability for damage from space launches; negotiation of a free trade agreement with the United States concerning launch services; and an agreement protecting technology transfer while each satellite is in China.[56] The technological know how the Chinese were to be confined to was that what they required in order to be able to launch the satellite. Included in the agreements was a quota limiting China to no more than nine international satellites between 1989 and 1994[57], and that its launch prices would be similar

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[52] Stephen M. Shaffer & Lis Robock Shaffer, *The Politics of International Cooperation: A Comparison of U.S. Experience in Space and in Security*, Volume 17 Book 4, 1980, p. 26.

[53] Liu Dengrui, "China's Space Industry Forging Ahead", *China Today*, September 1996, vol. 45 no. 9, p. 41.

[54] Radhakrishna Rao, "China's Space Plan", *Satellite Communications*, February 1987, vol. 11 no. 2, p. 26.

[55] Liu Dengrui, p. 42.

[56] Marcia S. Smith, *China's Space Program: A Brief Overview Including Commerical Launches of U.S.-Built Satellites*, September 3, 1998, p. 4.

[57] Fact Sheet on the Memorandum of Agreement Between the US and PRC Regarding International Trade in Commercial Launch Services," US Department of State, Washington,

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with other launch service providers. The approval for the export of the Australian satellites was granted by the Coordinating Committee on Multilateral Export Controls (CoCom). The Chinese government met all of the required conditions as laid out in the Memorandum of the Agreement on Satellite Technology Safeguards Between the Governments of the United States of America and the People's Republic of China which was signed in December 1988.[58]

However the events in Tiananmen square led President Bush to suspend their export licenses. The prior conditions set out by the Reagan Administration were superceded by Congress in the FY1990 Commerce, Justice, State and Judiciary Appropriations Act and the 1990-91 Foreign Relations Authorisation Act.[59] The new conditions Congress set out to the President were firstly, that China had achieved political and human rights reforms and secondly, that it was in the national interest of the United States. In December 1989, President Bush notified Congress that it was in the national interest to export the AUSSATs-1 and 2 and Asiasat-1. The first satellite that was launched was Asiasat-1 on April 7, 1990 and the AUSSATs-1 and 2 were subsequently renamed to Optus B1 and Optus B2 and launched on August 13, 1992 and December 21, 1992 respectively.

The license agreements that China required in order to launch foreign satellites on their territory were temporarily revoked by the United States on June 16, 1991. This action was taken since the State Department had identified CGWIC as one of two organizations that had been in proliferation of missile technology.[60] The relevant pieces of legislation under which the sanctions were authorised were the Arms Export Control Act and the Missile Technology Control Regime (MTCR). The invocation of the MTCR in relation to satellite launch technology rests on the interchangeability of ballistic missiles and satellite launch vehicles. China in the face of this action subsequently agreed to abide to the MTCR and the sanctions were lifted in March 1992.

A new seven year commercial space launch agreement was signed between the United States and China in January 1995. This agreement

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D.C., 1989 quoted in Gordon Pike, op. cit., p. 112.

[58] Gordon Pike, p. 111.

[59] See Congress FY1990 Commerce, Justice, State and Judiciary Appropriations Act (P.L. 101-246, Section 902) & 1990-91 Foreign Relations Authorisation Act (P.L. 101-246, Section 902).

[60] Marcia S. Smith, p. 5.

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permitted China to launch eleven foreign satellites into geostationary orbit along with the prior four launches they had previously agreed to in 1989.[61] A further five satellites launches were to be allowed[62], on the proviso that China agreed not to price its launch services more than fifteen per cent below that of Western companies, if this occurred a U.S. review would be undertaken. Prior to this in the late 1980s China was charging twenty per cent less that the prevailing international rates.[63] The United States strategy in the international launch service market is based on the notion that China, Russia and Ukraine should not win a combined total of contracts of more than fifty per cent of any low earth orbit satellites constellation. The fifteen per cent pricing policy appears to be grounded in this strategy. A more formal pricing arrangement was reached on October 27, 1997 for Chinese space launches to low earth orbit with China agreeing to pricing its launches at the same level as their U.S and European counterparts, with adjustments made for certain differences.[64]

The procedure for issuing license agreements for the export of commercial satellites was altered in 1996 with the Commerce taking overall responsibility away from the State Department. This action was seen by some as a relaxation of the procedure, since the Commerce Department's overall concern is increasing trade, whilst the States Department's concern is not driven to the same extent in that direction. Indeed, prior to this shift the Commerce Department's licensing responsibilities included items not on the Munitions Control list such as cleaning agents, bottled gases and spacecraft handling equipment. The possibility that Loral and Hughes satellite manufacturing companies transferred technology after the Intelsat 708 satellite malfunction after the two companies investigated the reasons into the incident, occurred in 1997.[65] The subsequent report by Loral which included representatives from Hughes was made available to the Chinese, before it had

[61] Marcia S. Smith, p. 6.

[62] The five extra international satellite launches were to be in two phases, the first would permit two satellite launches followed by a further three.

[63] Radhakrishna Rao, "China's Space Plan", *Satellite Communications*, February 1987, vol. 11 no. 2, p. 26. The author however makes a caveat that this figure is according to Chinese official sources. China was charging between $20m to $25 million to launch a communications satellite, Ariane would charge $30m and the shuttle would cost $20 plus $10 for payload assistance to place the satellite into the required orbit.

[64] Marcia S. Smith, p. 7.

[65] Marcia S. Smith, p. 7.

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notified the State Department in direct contravention of the companies own policies. The companies in their defence notified the State Department of their error and claimed no technical transfer of information had been contained in the report. However, according to a leaked 1997 Defence Department report technical information that the Chinese used to improve the reliability of their warheads was contained in the company report.[66]

This evidence prompted the House of Representatives to investigate these companies and their assistance to the Chinese. This report, "The Final Report of the Select Committee on US National Security and Military/Commercial Concerns with the People's Republic of China", is more commonly know as the "Cox Report." The allegations of the Cox Report remain deeply contested, although it did highlight a concern that the Chinese are using cooperation with international companies to further enhance their indigenous military space capabilities.

One author writing about the tensions between national security and technology transfer highlights the confusion at the center of U.S. policy:

> At times, the anti-Soviet concerns gain the upper hand, and worries about high-technology "leakage" to the Communist East lead to restrictive transfer policies to private corporations and our European allies. At other times (and even sometimes simultaneously), the national concerns for American technological and economic competitiveness make themselves felt, and policies to facilitate transfer of space technology from NASA to U.S. corporations are formulated.[67]

This quote is dated in connection with the Soviet Union, but it is however valid in connection with the recent disputes with the United States and China mentioned above. The concern with regard to China is not new, the issue is how far the shift in emphasis for technological transfer from the State Department to the Commerce Department has enabled China to use this knowledge to enhance its military space systems. For the purposes of this thesis, the Chinese intent to enhance its military space systems is the most important aspect of this episode. It

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[66] Jeff Gerth & Raymond Bonner "Companies Are Investigated For Aid to China on Rockets" *New York Times*, April 4, 1998 A1.

[67] Walter J. Jones, "National Security, Technology Transfer Controls, and U.S. Space Policy", quoted in Daniel S. Papp and John R. McIntyre, *International Space Policy: Legal, Economic, And Strategic Options For The Twentieth Century And Beyond*, (New York: Quorum Books, 1987), p. 66.

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can be said that the Chinese are keenly interested in using any international cooperative space programs to further their military space capabilities.

China's Interest in Anti-satellite Weapons

In 1998 there was a report that China's Central Committee was giving its highest priority to the development of anti-surveillance satellite systems.[68] This system is a ground-based laser generator with a capability to damage sensors of low-earth orbit imaging satellites. It is believed that the laser has been developed in cooperation with Russia, however this is not confirmed and it would be underestimating the capabilities of Chinese specialists to merely attribute its development to Russia.

The Cox Report in 1999 also addressed the issue of China's interest in anti-satellite weapons. It judged that China had the technical capability to develop the CSS-2 into a direct ascent anti-satellite weapon, similar to the Soviet ASAT system that used the SS-9.[69] Other reports have mentioned the possible modification of China's solid fuelled missiles, the DF-21 or DF-31 as a direct ascent kinetic kill weapon. One author has reputedly mentioned the use of the Long March 1 in an ASAT role.[70]

A website detailing the PLA's ground based laser ASAT was posted on the internet.[71] The information contained on the website was obtained from a report that was made available only to Congress and is not published externally. The source of the report was made available from Representative Rohrabacher. From the report the following table shows China's requirements for a laser weapon system.

According to press reports from the Hong Kong based Chinese Newspaper Sing Tao of January 5, 2000 China has developed and ground tested an advanced anti-satellite weapon, called a parasitic

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[68] Paul Beaver, "China Develops Anti-Satellite Laser System", *Janes Defence Weekly*, December 2, 1998, p. 18. See also Paul Richter, "China May Seek Satellite Laser, Pentagon Warns", *Los Angeles Times*, November 28, 1998.

[69] "The Final Report of the Select Committee on US National Security and Military/Commercial Concerns with the People's Republic of China" Subsection "PRC Missile and Space Forces":
http://www.cnn.com/ALLPOLITICS/resources/1999/cox.report/missiles/page1.html

[70] Mark A. Stokes, "China's Strategic Modernisation: Implications for the United States", *Strategic Studies Institute*, (Pennsylvania: US Army War College, September 1999), p. 186.

[71] http://www.softwar.net/plasat.html

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satellite.[72] A "parasitic satellite" is a micro-satellite that is designed to attach itself to a target satellite and can be activated when required, to either jam or destroy the intended satellite. It is claimed that the parasite satellite is able to attack satellites in low, medium or high-orbit, and is so small as to not affect the target satellites normal functions and hence go undetected. The cost of this "parasitic satellite" is one-hundredth or one-thousandth of that of an ordinary satellite.[73]

Rough Estimates of China's Laser Weapon Systems Requirements

	Anti-Satellite Weapon
Operational Range (kilometres)	500-1000
Target Speed (kilometres/second)	8
Target Hard Kill Irradiance (Watts/Centitmetre)	10 x 3
Laser Brightness (Joules/Steradian)	2 x 10x17-10x19
Dwell Times (Seconds)	1-10
Average Power on Target (Watts)	10x6 – 10x7
Beam Quality Requirements	2
Laser Wavelength (Micrometres)	Approx. 1
Output Beam Diametre (Metres)	4
Pointing & Tracking Requirements (Microradians)	Less than 1
Adaptive Optics Requirements	Many actuators
Beacon Requirements	Multiple Beacons

The parasitic satellite is being developed by the Small Satellite Research Institute of the Chinese Academy of Space Technology. The system has three components: the parasitic satellite, a carrier satellite and launcher, and a ground control system.[74] Owing to the mode of operaton of the parasitic satellite, it must be extremely small to conceal its existence and avoid interfering with the normal operation of the host satellite. The parasitic satellite is comprised of nanometre-sized components: solar panels, batteries, computers, CCD cameras, communications and propulsion systems, auxillary equipment, and combat systems.[75] These components use micro-technologies which enables the satellite to weigh several kilogrammes to several tens of kilogrammes, with some only several hundred grammes. This low weight

[72] Al Santoli, "PLA Successfully Tests Advanced Anti-Satellite Weapon", *China Reform Monitor,* American Foreign Policy Council, Washington, D.C., No. 355, January 17, [accessed] 2001 http://www.afprc.org/crm/crm355.htm

[73] ibid.

[74] Cheng Ho, "China Eyes Anti-Satellite System", *Space Daily*, July 8, 2000: http://www.spacedaily.com/news/china-01c.html

[75] ibid.

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is essential to the functioning of the parasitic satellite.

It is alluded to that the technology required to use micro satellites as parasitic satellites was developed in cooperation with the United Kingdom. In 1998, Hantyen Satellite Corporation and Britain's University of Surrey Space Technologies signed a contract to co-develop micro satellites. Within two years, the first Chinese micro-satellite was launched.[76] China's Tsinghua and Harbin Universities, in a cooperative development program with the British-based Surrey Satellite Technology Ltd., launched a micro-T spacecraft in May 2000, and announced plans to develop a 22 pound nano-satellite.[77] Indeed, the connection with the PLA and Surrey University is further elaborated with the claim that China has made great strides in the development of micro-satellites capable of performing the sort of space control functions described above.[78] Other foreign participants in assisting China's miniaturization of its satellites include the former Dornier Company, now Astrium in Friedrichshafen, Germany.[79]

The PLA has outlined its mission with regard to military space consisting of two categories. The first is information supporting, and the second, battlefield combating.[80] Its initial aim with relation to military space is within the information supporting. It has further defined this mission, as intelligence, navigation/positioning and communication. One Chinese author, believes that two sides in a war will concentrate on offensive and defensive operations that are conducted from space and these will become a new aspect in future wars.[81]

Conclusion

China has a considerable military space capability. The development of its communications, photoreconnaissance, also in terms of different

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[76] Summary of the Center for Security Policy's High-level Roundtable Discussion of: "Space Power: What is at Stake, What will it Take?" 11 December 2000 902 Hart Senate Office Building,Washington, D.C. [accessed]: http://www.centerforsecuritypolicy.org/papers/2001/01-P04at.shtml

[77] Al Santoli, *China Reform Monitor* American Foreign Policy Council, Washington, D.C., No. 383, May 14, 2001 [accessed] http://www.afpc.org/crm/crm383.htm

[78] Frank J. Gaffney, Jr., "Wake-Up Call on Space", CNSNews, January 9, 2001 [accessed] http://usconservatives.about.com/blc0109space.htm

[79] Phillipe Cosyn, "China Plans Rapid-Response, Mobile Rocket, Nanosatellite Next Year", *SpaceDaily*, May 1, 2001, [accessed] http://www.spacedaily.com/news/china-01zc.html

[80] You Ji, *The Armed Forces of China*, (I.B. Taurus: New York, 1999), p. 84.

[81] Chen Huan, "The Third Military Revolution", in Michael Pillsbury, ed., *Chinese Views of Future Warfare*, (National Defence University: Washington D.C., 1998)

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spectral forms such as synthetic aperture radar, electronic intelligence and navigation satellites, offer a formidable military space capabilities. It also is actively considering the development of space weapons, in the form of anti-satellite weapons. The reconnaissance capabilities in particular would allow China the ability to monitor Taiwan's defences to be used for a possible attack if it does not adhere to the principles China has laid out for Taiwan in relation to its independence status. In addition the satellite navigation could be enhanced for use in increasing the accuracy of China's ballistic missile capabilities. The ASAT capabilities, under examination are direct ascent missiles, ground based lasers and a parasitic satellite with an explosive charge.

In the last couple of decades in particular, China has forged a number of international agreements in the realm of space. These are often termed as civilian space ventures, however many of them have military capabilities, as has been evidenced. To reiterate the miniaturisation satellite technology developed from the United Kingdom could be used as part of China's parasitic anti-satellite capability. Similarly, the development with Brazil of CBERS satellites assists China in developing its photoreconnaissance capabilities. This cooperation has allowed China to develop its military space capabilities considerably quicker than it would otherwise being able to do so. China now has a considerable array of satellites which have dedicated military purposes.

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Political Correctness and the Ideological Struggle: From Lenin and Mao to Marcuse and Foucault

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The first use of the term political correctness can be traced to the period between 1895-1921 when Lenin was trying to achieve two goals: first, to secure ascendancy over his revolutionary peers; and second, after 1917, to consolidate the party's control over the new Soviet state. This article explores the Leninist origins of political correctness and its evolution since 1917. The author analyses the exceptional importance of "correctness" in the Maoist variant and, subsequently, through Maoism, its influence on the New Left and the contemporary manifestation of political correctness which emerged as a public issue in the West at the end of the 1980s.

Key Words: Althusser, BBC, Berger, Chinese Communist Party (CCP), class enemy, Confucius, crimestop, cultural revolution, democratic centralism, Derrida, feminism, Foucault, Galbraith, Gramsci, Great Leap Forward, Grossman, Horst Wessel, ideologically correct, *istina*, Kautsky, Khrushchev, *laogai*, Lei-Feng movement, Lenin, Liu Shao-Chi, Mao, Marcuse, Miłosz, multiculturalism, New Left, Orwell, *partiinost'*, Pasternak, Pavlik Morozov, *perekovka*, Platonov, Plekhanov, political correctness, *pravda*, *pravit'nost'*, Rectification, Red Guards, revisionism, *shinian haojie*, *si xiang gai zao*, Sino-Soviet schism, socialist realism, Solzhenitsyn, *soznanie*, struggle session, thought reform, *tifa*, Tolstaya, unity-criticism-unity, Weaver, Wu, *yü-lu*

Introduction

The suddenness with which political correctness entered the public domain in the period between 1989-1991, and the ensuing arguments about the legitimacy of Western culture which lasted until well into the mid 1990s, implies that the concept of political correctness is a very recent phenomenon, the origins of which are to be found in certain intellectual trends of the late twentieth-century. Richard Burt, for example, in an essay published in *Censorship: A World Encyclopedia*, argues that the term political correctness was first introduced by the New Left in the 1960s (Jones, 2001, 1901). Certainly, thinkers of the New Left developed the concept, but long before Marcuse and Derrida, and a host of other New Left and postmodernist writers were required reading on the campus, we find political correctness established as an ideological criterion of Marxism-Leninism. Official Soviet sources clearly show that the term was in use as early as 1921 (*Resheniya*, 1967,

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205). If one takes into account the role of Lenin as the architect of the Soviet Union, and his massive influence in shaping Soviet ideology, then a reasonable assumption is that it is to Lenin to whom we must turn in order to find the conceptual origins of political correctness and the term itself. Soviet sources support this assumption.

A review of a diverse and large body of Soviet and Western literature, written and published throughout the twentieth century, which was conducted in preparation for this article, repeatedly identifies the theme of correctness – ideological, political or theoretical – as a concern of exceptional importance for Marxist-Leninism and Maoism. The range of sources is impressive: Lenin's own writings before and after the start of the twentieth century; some early resolutions of Communist Party congresses; the insights of writers and philosophers, for example, Joseph Berger, George Orwell, Czesław Miłosz, Stefan Amsterdamski, Leszek Kolakowski, Balint Vazsonyi[2], Arthur Koestler and Alain Besançon; the writings of Mao, and other official Chinese sources; victims of Soviet psychiatric abuse; Chinese and Soviet dissidents; scholarly studies, both Soviet and Western, of Soviet propaganda, agitation and media[3]; and the works of some of Russia's greatest writers, most notably, Andrey Platonov, Boris Pasternak, Vasiliy Grossman and Alexander Solzhenitsyn.

Soviet and Chinese manifestations of political correctness are worlds of paranoid suspicion, endless show trials, false confessions and struggle sessions. They are worlds where the workings of the rational mind are viewed with suspicion, even hatred. For the hapless victims ensnared in the web of communist ideology it was frequently a matter of life and death (Conquest, 1990, Lifton, 1961, Lin, 1991, Thurston, 1988, Wu, 1994). In the aftermath of the Soviet experiment, Russian scholars have explored the connection between Soviet ideology with its insistence

[2] Balint Vazsonyi, a refugee from communist persecution, states that his first encounter with the term politically correct was when he read the works of Anton Makarenko, Lenin's expert on education (Vazsonyi, 1998, 13).

[3] In her pioneering study of the Soviet media published in 1973, that is well before the term political correctness acquired wide usage, Gayle Durham Hollander made the following observation: 'The teacher is a third source of political influence: as a representative of society's authority, she is both an adult model of behaviour, and the perpetrator of a learning culture in which political correctness is an integral part of scholarly success. [...] Alternative views of politics are ridiculed or ignored, and Marxism-Leninism is presented as the basis of all knowledge – social, political, aesthetic, and scientific. (Hollander, 1973, 13, emphasis added). Note in this respect the Soviet ditty: 'if you are ideologically consistent, then you are politically literate'.

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on correctness and the consequences for Russian culture (Dobrenko, 1997, Etkind, 1993, Shalin, 1996). Their observations leave no doubt that political correctness was an ideological criterion which applied to all spheres of intellectual endeavor. Having lived under a system where verbal spontaneity and scepticism could sometimes be fatal, and having experienced the party's attempts to police thinking, these former Soviet citizens, and their Chinese counterparts, offer acute insights into the problem of political correctness in the West today.[4] They repay careful study.

Lenin, Partiinost' and Political Correctness

In fashioning an élite revolutionary party, Lenin was obsessed, perhaps tormented, with questions of ideological purity and orthodoxy. For Lenin, theoretical considerations were paramount: 'Without a revolutionary theory', wrote Lenin in *What is to be Done?*, 'there can be no revolutionary movement' (Lenin, 1946, 341).[5] Only a specifically revolutionary theory, Lenin believed, would prevent the incipient revolutionary movement from abandoning 'the correct path' (Lenin, 1946, 341). Despising the exemplar of liberal democracy represented by England, Lenin believed that if a small revolutionary party was to maintain its sense of purpose and seize power, then it had to avoid becoming just a forum for discussion, with all the in-fighting and factionalism that involved. Party discipline and the sense of purpose could only be maintained, according to Lenin, if there was a rigidly enforced party line on all questions: from the materialist explanation of knowledge and reality, the supposed crisis of imperialism which led to World War One, to a free press or the role of women in the future communist utopia, there was, if the party theoretician knew his seminal and patristic texts, a politically correct answer.

Lenin himself, as in so many things Soviet, set the precedent and the

[4] Tat'yana Tolstaya's essay identifies the various themes of political correctness in the West – racism, sexism, lookism – yet understates or largely ignores the repressive legal and intellectual infrastructure that supports political correctness and the corrupting effects on the university, though the Soviet maxim cited by her points to precisely that: 'if you don't know then we'll teach you, if you don't want to know then we'll force you' (Tolstaya, 1998, 131). She also fails to identify the Leninist contribution. Her use of korrektnost', which is a literal translation of the English, instead of pravil'nost' is misleading since it implies non-Soviet origins. The same error can be found in The *Concise Oxford Russian Dictionary* where political correctness is translated as politicheskaya korrektnost' (1998, 816).

[5] The section from which this is taken is entitled "Engels concerning the significance of the theoretical struggle".

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standard for dealing with deviations from the party line. His tone varies according to the status of the addressee. Lenin can be the teacher, impatient with some sceptic who lacks his commitment to ideology or, fearing the criticism of his peers, he shows himself to be the master of the *ad hominem* attack. In an article first published in 1906, in response to a draft resolution of a party congress, demanding freedom to criticise, Lenin accused the resolution's drafters 'of totally, incorrectly understanding the relation between *freedom of criticism* within the party and the party's *unity of action*' (Lenin, 1947, 408, emphasis in the original). 'The Central Committee's resolution', argued Lenin, 'is incorrect in essence and *contradicts the party's statutes*' (Lenin, 1947, 409, emphasis in the original). Even Plekhanov, one of Russia's foremost interpreters of Marx, was attacked by Lenin for, *inter alia*, '*incorrectly* assessing the real relationship of the proletariat towards both the government and the bourgeoisie' (Lenin, 1947, 412, emphasis added). In his ferocious polemic Lenin asks 'whether comrade Plekhanov has *acted correctly*' and answers his own question: 'No, he has behaved *completely incorrectly*' (Lenin, 1947, 412, emphasis added). In a later article, also published in 1906, Plekhanov came in for another bout of Leninist invective: 'He [Plekhanov] is profoundly mistaken. "Treachery" is not "a strong word" but *the sole correct expression from a scientific and political point of view* to describe the actual facts and the actual aspirations of the bourgeoisie' (Lenin, 1947, 437-438, emphasis added). One can note here, in passing, that Lenin conflates political and scientific correctness in his riposte to Plekhanov. Karl Kautsky, another prominent interpreter of Marx, received the same treatment when in *The Dictatorship of the Proletariat* (1918) he warned of the violence that would ensue from the Bolshevik dictatorship. As a counter attack Lenin wrote *The Proletarian Revolution and the Renegade Kautsky* (1918), consigning Kautsky to the ranks of the ideologically damned. Lenin's manner of dealing with politically incorrect deviations justifies Grossman's observation that: 'In an argument Lenin did not seek the truth [*istina*], Lenin sought victory' (Grossman, 1974, 169).

To assist his drive for ideological paramountcy Lenin invented *partiinost'*, which in English translation can mean party membership, party-mindedness or party spirit. To this list one could also add party truth (see Berger below). According to Kunitsyn, *partiinost'* was first used by Lenin in 1894 in a dispute with opponents concerning the objective state of knowledge (Kunitsyn, 1971, 45). Knowledge and truth,

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argued Lenin, are a product of one's class. In fact, what is called objective knowledge is a part of the bourgeois conspiracy to retain power and control so that the working classes can be exploited. In non-Marxist thought truth and knowledge are merely bourgeois biases. This dispute features prominently in all Marxist-Leninist polemics and adumbrates the intellectual relativism of postmodernism, specifically that truth is a matter of perspective. The idea that knowledge and truth (and latterly perspective) are class-specific (or in Neo-Marxism community-specific) defines the Leninist notion of *partiinost'*, as can be seen from the following:

> If, having examined the origins of this question, one tries to formulate the concept of *partiinost'* which emerges from Leninist assumptions, then it may be looked at in the following manner: the *partiinost'* of ideology (in particular journalism, literature and art and so on) is then *the conscious struggle of the ideologue, theoretician, publicist, artist (of each using his own specific means) for asserting the interest of one or another social class* (Kunitsyn, 1971, 55-56, emphasis in the original).

A later Soviet study reaffirmed the basic thrust of what we are to understand by *partiinost'*:

> *Partiinost'* in communist propaganda is fidelity to the higher, class interests of the working class and its mission of the revolutionary transformation of the nature of social relations. The principle of *partiinost'* rejects the pretensions of bourgeois ideology and propaganda to "non-*partiinost'*", "objectivity" and "pluralism" as masking the bourgeois mechanism of social control (Beglov, 1984, 362).

Taking his lead from Lenin, Kunitsyn, in his analysis of *partiinost'*, repeatedly emphasises the correctness of Leninist teachings. Thus, he refers to 'the *correctness* of the chosen path' (Kunitsyn, 1971, 81, emphasis added). Various supporters of the Bolsheviks are upbraided for being 'unable *correctly* to understand Bolshevism' (Kunitsyn, 1971, 99, emphasis added). Of another party member we are told that he 'lost the *correct orientation* and was even ready to accuse Lenin of "factional tendentiousness"' (Kunitsyn, 1971, 163, emphasis added). Certain individuals, who though willing to sacrifice their lives for the cause, 'did not always act and think *correctly*' (Kunitsyn, 1971, 166, emphasis added). Colleagues who make ideological mistakes need to be the focus of '*correct* work' (Kunitsyn, 1971, 180, emphasis added) and problems of culture are to be resolved in '*a correct Leninist way*'(Kunitsyn, 1971, 183,

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emphasis added). Then we are instructed as to the need for 'the foundation of the *correct* relations of the proletariat and the revolutionary intelligentsia' (Kunitsyn, 1971, 224, emphasis added). Even science must submit to the dictates of *partiinost'*: 'Lenin's solution of the problem of the interrelationship of gnosiological and political *partiinost'* enables us *correctly* to understand the problem of the *partiinost'* of science, *correctly* to set about the practical selection of authors writing in the press on scientific questions' (Kunitsyn, 1971, 134, emphasis added). The frequency with which Kunitsyn and other Soviet interpreters of Lenin – and later, Mao – identify Marxist-Leninist orthodoxy with correctness and ideological absolutism reveals much about the state of Soviet scholarship in this field, and elsewhere. We are confronted here not so much with a study of a serious subject but rather a sustained panegyric, even a hagiography, of Lenin, the father of all theoreticians, in which the hagiographers are more concerned to demonstrate their own political correctness than intellectual rigour.

Lenin's concept of *partiinost'* is, I believe, the most likely progenitor of political correctness. For it is *partiinost'* that accounts for the unusual ferocity of all communism's ideological disputes whether they are being carried on among various intra-party factions or directed at external enemies. Lenin is quite clear that non-*partiinost'* separated the socialist from the bourgeoisie: 'Non-*partiinost'* is a bourgeois idea. *Partiinost'* is a socialist one' (Lenin, 1947, 61). *Partiinost'* is the hallmark of ideological purity: non-*partiinost'* identifies the ideologically deviant. Kunitsyn identifies three main types: *revolyutsionnaya partiinost'* (revolutionary party spirit); *kommunisticheskaya partiinost'* (communist party spirit); *politicheskaya partiinost'* (political party spirit, Kunitsyn, 80 & 126). Given the various meanings that can be attributed to *partiinost'*, and the fact that the theory of *partiinost'* was still being ideologically modified in the years before 1917, the mutation of *politicheskaya partiinost'* (political party spirit/truth) into *politicheskaya pravil'nost'* (political correctness), was not an unpredictable outcome. Certainly, there existed a need for such a formulation. In the Manichean mindset created by Leninism a term was required, which, unlike *partiinost'*, contained an explicit reference to right/wrong, correct/incorrect from a political or ideological point of view, one that could be used to indict those deviating from the party line in an authoritative manner. *Politicheskaya pravil'nost'*, that assertive, impressive sounding and approving criterion of orthodoxy, satisfies this requirement very well indeed. We might see political

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correctness as a practical solution to a problem arising from the theoretical discussions surrounding *partiinost'*.

Lenin refined his position on *partiinost'* in *What is to be Done?* and the influential article "Party Organisation and Party Literature". In its revolutionary, communist or political forms *partiinost'* went beyond being merely politically correct, and was elevated to the realm of science (see, for example the response to Plekhanov above). Now, this should not be taken as an appeal to discredited bourgeois notions of objectivity but should instead be seen as being based on a higher form of rational thinking, that of class consciousness or *soznanie*. The ideology of class makes possible a new powerful mechanism for interpreting the world, scientific socialism no less.[6] Science and scientific method, as it had evolved since Newton, could not escape the need for a correct understanding of the world, one that was congenial to Marxism-Leninism.[7] Where science clashed with Marxist-Leninist ideology, as it frequently did in the course of the twentieth century, then scientists were expected to confess to "errors" and recant or were arrested. Lysenkoism was one of the better known communist witch hunts against scientists who presented or implied conclusions contrary to Marxist-Leninist orthodoxy (Counts & Lodge, 1949, Medvedev, 1969). Liberated from the burden of proof, Lenin and his successors were allowed to claim superior insight. The consequences were profound. By insisting on party unity at all costs and instilling fear of factionalism, Lenin made serious intellectual discussion impossible. Absolute theoretical certainty or rather the belief that the party had uncovered the laws of historical progress justified all means necessary to bring about the new society. To quote Valentin Turchin: [...] 'society is either structured "correctly" (i.e., in accordance with the laws of Nature) or "incorrectly" (i.e., in contravention of them). In the latter case, society must be ruthlessly destroyed and then rebuilt' (Turchin, 1981, 164).

Consistent with the creation of a revolutionary élite to guide the masses, great emphasis in Lenin's writings is attached to ensuring that the right people work in the party press, that they be thoroughly well versed in Leninist thought and they have an intuitive understanding of what is politically/ideologically correct.

[6] In an article first published in 1906 ("Kadety, trudoviki, i rabochaya partiya"), Lenin congratulates himself on the 'correctness' (pravil'nost') of dividing the main bourgeois parties into three main types (Lenin, 1947, 420).

[7] As Françoise Thom has pointed out: 'The phrase 'the correctness of Leninist theses' implies that the proposition 'Leninist theses are correct' is true' (Thom, 1989, 83).

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Pravil'nost' informs all aspects of publishing and the dissemination of ideas, particularly translations of foreign literature which carries a heightened risk of ideological deviation. To this end, notes Kunitsyn, 'our party supports among the flood of publications that which helps *the correct understanding of life*' (Kunitsyn, 1971, 100, emphasis added).[8] We are warned that not all authors can be relied on to provided a '*correct understanding*' of class character (Kunitsyn, 1971, 131, emphasis added) and 'In the long term', writes Kunitsyn, 'the *correct* education of authors acquired a much bigger role' (Kunitsyn, 1971, 232, emphasis added). Lenin, we are also assured, believed that 'the workers, confronted with a Marxist explanation of any complicated situation, would *correctly* understand' and 'he [Lenin] showed such boundless punctiliousness in *correcting* errors which had been made in the party press' (Kunitsyn, 1971, 160, emphasis added). Lenin was also concerned 'about the *correct* implementation of revolutionary principles in the press' (Kunitsyn, 1971, 194, emphasis added), and revolutionary struggle and its interests required a '*correct*, fundamentally scientific reflection of them in the press' (Kunitsyn, 1971, 191, emphasis added). In other words, censorship of all writing is fully justified.

This insistence on the link between correct thinking and writing means that journalism and writing become the collective responsibility of the party. It is expressed in one of Lenin's most oft-quoted lines: 'The newspaper is not only a collective propagandist and collective agitator, it is also a collective organizer' (Lenin, 1946, 10). The paper was intended to educate the masses politically, preparing them under the guidance of the party for the day of revolution. With this end in mind Lenin insisted on 'the correct supply' of material for the paper and 'on its correct dissemination' (Lenin, 1946, 11). As a later official Soviet source makes clear, one of the tasks of party propaganda is 'to elucidate for the benefit of the working masses the correctness of the party's policy [*pravil'nost' politiki partii*] and the need to implement it' (*Malaya Sovetskaya Entsiklopediya*, 1959, column 628).

Free and open discussion, which existed in the West, represented the greatest threat to Lenin's arrogation of intellectual infallibility. Two points can be noted. First, a free press protected in law cannot be easily

[8] Under conditions of Maoism, as Michael Schoenhals points out, the problem is especially fraught with dangers for Chinese translators of Western books: 'Translators and others professionally engaged in the systematic introduction of foreign thought in China have always been in a precarious situation when it comes to formulations' (Schoenhals, 1992, 117).

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manipulated, and Lenin can, of course, be attacked with impunity. Journalists will resist control by a small group of individuals – Lenin's party for example. Second, the very lack of centralised control means that the concentrated essence of ideology, deemed by Lenin to be a precondition for the pursuit and consolidation of power will not be achieved. This leads to heterodoxy, ideological deviation and debasement of the medium for less serious purposes (entertainment, sensationalism, tabloid journalism, for example). Nevertheless, Lenin argues that within the party: 'Free speech and the freedom of the press must be total' (Lenin, 1947, 29), subject to the caveat that the party reserves the right to expel those who propagate anti-party views. Regarding the procedure to be adopted for ascertaining 'anti-party views', Lenin makes the following point:

> The party's programme, the party's tactical resolutions and its code and finally the entire experience of international social-democracy, of international voluntary alliances of the proletariat, which while constantly incorporating into their parties individual elements or trends, which are not entirely consistent, Marxist, or correct, but, additionally, constantly initiating periodic "purges" of their party, shall serve to determine the line separating party views from anti-party ones (Lenin, 1947, 29).

So the party, in order that it preserve orthodoxy, must resort to periodic purges of incorrect elements whose incorrect status shall be determined by the party élite in accordance with the doctrine of democratic centralism. Lenin provides an ideological justification for terror against the party itself and against any opposition to the party from outside. In such apparently innocuous, theoretical beginnings we find the genesis of communist terror which has had truly catastrophic consequences in the twentieth century. Terror itself is politically correct.

Harsh administrative measures to eradicate factionalism from party ranks were stepped up after 1917. Demonstrations of ideological orthodoxy become crucial for survival. Evidence of the party's determination to root out factionalism and other heresies can be seen at the 10th Party Congress in 1921. The resolution 'Concerning Syndicalist and Anarchistic Deviation in Our Party' (16th March 1921) is particularly important:

> Apart from theoretical disloyalty and a fundamentally *incorrect* [*nepravil'nyi*] attitude towards the practical experience initiated by Soviet power in the field of economic construction, the congress of the RKP, in the views of the aforementioned group and analogous groups and persons,

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> sees *colossal political incorrectness* [*gromadnaya politicheskaya nepravil'nost'*] and an immediate political danger for the preservation of power on behalf of the proletariat (*Resheniya*, 1967, paragraph 5, 205, emphasis added).

Returning to ideas first expressed in *How to Begin?*[9], Lenin in a letter to Kurskii dated 17th May 1922, submitted an amendment to the Soviet Criminal Code. Free of all practical restraints, the theoretical struggle now gives way to physical extermination of class enemies. Terror reaches its politically correct apotheosis:

> Despite all the shortcomings of the draft, the fundamental idea is, I hope, clear: that is openly to bring forward a principled and politically correct[10] (and not merely narrowly juridical) statute, which sets out the *essence* and *justification* of terror, its necessity and limits.
>
> The court must not eliminate terror – to promise that would be self-deceit or a trick but is to put it on a sound principled foundation, to legitimise it, clearly. without any lies or evasions. It must be formulated as widely as possible, since only a revolutionary feel for justice and a revolutionary conscience will stipulate the terms of use as widely or as not (Lenin, 1964, 190, emphasis in the original).

By the time of Lenin's death in 1924, and certainly no later than the end of the 1920s, the concept of correctness was pervasive in ideology, politics, psychiatry, education, literature, history, jurisprudence, culture and economics. To be politically correct meant to be consistent with, not deviating from, the party line or any given issue. To be politically incorrect was to run the risk of being denounced as engaging in 'revisionism', 'factionalism', being a 'wrecker' or 'an enemy of the people'.[11] Even the choice of children's names was affected,[12] and a

[9] 'From a point of principle we have never renounced and cannot renounce the use of terror' (Lenin, 1946, 7).

[10] Richard Pipes translates the Russian original – politicheski pravdivoe – as politically correct (Pipes, 1994, 401) which I have retained since it is consistent with the ideological justification for the use of terror demanded by Lenin.

[11] Antony Beevor cites an NKVD [Soviet secret police] report, written in 1945, in which it is noted with some alarm that Soviet soldiers are talking about the obvious comfort of German civilians and forming 'politically incorrect conclusions' (Beevor, 2002, 34).

[12] In a letter published in The Times in 1970, Dr Nina Szamuely a specialist working on the Oxford Russian Dictionary wrote that: '[...] the craze for ideologically correct, artificial "revolutionary" names was extremely widespread in the twenties and early thirties'. Girls were given names such as Lenina and Stalina or Russian acronyms such as Revdit – revolyutsionnoe ditya – revolutionary child (The Last Cuckoo, 1987, 109).

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recent study of early Soviet reading habits also shows the astonishing lengths to which the Soviet state was prepared to go to ensure that the correct opinions were formed and internalised by readers (Dobrenko, 1997). The withdrawal of books published in Tsarist times, as part of a systematic policy of ideological indoctrination, clearly anticipates the contemporary feminist and multicultural approach to education at all levels. By the late Soviet period dissent or deviation was not just politically incorrect but regarded as symptomatic of some profound mental disturbance. Khrushchev, in a major policy speech to writers, whom he called 'engineers of human souls', (Khrushchev, 1959, 1) set the tone:

> Crime is a deviation from the accepted norms of behaviour in society, which is not infrequently caused by confusion in a person's psyche. Can there be illnesses, psychic disorders among individuals in a communist society?. Apparently there can be. And if there are, they will be misdemeanours, which are peculiar to people with an abnormal state of mind. So one will not judge a communist society by lunatics such as these. To those, who on a similar "foundation" might start to call for a fight against communism, one can say that there are indeed people who are fighting against communism, with its noble ideals, but, evidently, such people are manifestly not in a normal state of mind (Khrushchev, 1959, 2).

Dissent went on to become a factor in determining whether an individual should be incarcerated and is a recurring theme in the well documented abuses of dissidents in Soviet psychiatric institutions in the 1970s and 1980s (Bloch & Reddaway, 1977, Shalin, 1996).

Political Correctness and Socialist Realism

With its tradition of realism and social criticism, Russian literature had attracted the attention of the party well before 1917. Lenin's essay, "Party Organization and Party Literature" can rightly be seen as a foretaste of the sort of controls and expectations that would be imposed on journalists and writers. In the one-party state artistic endeavor would not be permitted to exist and function independently of the party. It would serve the ideological goals of the state. Initially, in the years before 1917, Lenin made some effort to appeal to his non-Marxist audience by arguing that writers and journalists who wrote for money were merely slaves of capital, whereas the writer who placed his talent at the disposal of the party was engaged in some noble activity. After 1917, with power seized and the free press banned, and the censorship apparatus initiated by decree, the pose of reasonableness could be

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dropped. Thereafter, authorial freedom was defined purely in terms of a willingness to commit oneself to the party and its goals.

Stalin's rise in the party coincided with a greater prescriptiveness regarding literary policy and led ultimately to the promulgation of the literary doctrine of socialist realism in 1934. Henceforth, art for art's sake was condemned. One of a number of notorious examples of socialist realism is Nikolai Pogodin's *The Aristocrats* (1934), which portrays former thieves and peasants undergoing *perekovka* (reform through labor) while building the White-Sea canal. The reality was something else. Prisoners were not "reformed" through labor at all but merely worked to death in appalling conditions in order to build a canal which, architecturally and practically, was of little value. A recent study, in which the author applies a postmodernist approach to the history of the canal, does to the memory of the victims what Soviet propaganda did as well: denies their suffering by relativizing and burying it under spurious theories (Ruder, 1998). Ruder argues that: 'Pogodin acted politically correctly, in contemporary parlance, and was rewarded for it with success and publication' (Ruder, 1998, 157). In both the context of the 1930s and that of the 1990s one could say that Pogodin acted 'politically correctly'.[13]

Socialist realism demanded that artists depict the world as it ought to be not as it was. Again, this principle has been thoroughly grasped by feminists and appears to be the holy of holies among practitioners in our contemporary broadcast and print media. It is, too, as any interested American parent can confirm, crucial in the production and marketing of contemporary school textbooks, many abandoning any pretence of historical accuracy in the name of "balance" and "fairness". Likewise, affirmative action and equal opportunities programs and legislation are predicated on a theoretical template that owes little to empirical data and human behavior.

An important point here and one that explains a great deal about Marxism-Leninism and Neo-Marxism is the distinction made in Russian between *pravda* (truth which is socially, morally or ethically just) and *istina* (the truth, the empirical state of affairs, that what nature makes possible or impossible). For the Marxist-Leninist, and more recently the multiculturalist and feminist, empirical reality (*istina*) is the enemy, since the Soviet ideologue and his current imitators are pursuing a socially

[13] For a detailed discussion of Ruder's book see Frank Ellis, 'The Decline and Fall of History', *Salisbury Review*, vol 20, No 2, 2001., pp.28-32.

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and morally higher truth (*pravda*). This somewhat arcane difference between the two types of truth in Russian was thoroughly understood by the former communist, Joseph Berger:

> [*Istina*] denotes the correspondence between the notion and the objective reality. *Pravda* is a unique and specifically Russian concept: it means the highest concept of truth, a truth elevated to the rank of an idea. It is etymologically linked with *pravo* ['right' or 'law'] and with *pravosudie* ['process of justice']. A Russian who 'stands for *pravda*' or who 'struggles for *pravda*', does not stand or struggle for the sum of all kinds of truth, big and small, but for the truth which needs to be attained, truth in action, the ideal of conduct, the correspondence between acts and the demands of ethics. Perhaps in English one would have to say 'the right truth' or 'knowledge plus righteousness', but this splits the concept – and in the thirties this split created an abyss.
>
> In the rooms of the NKVD [Soviet secret police] and at Party meetings, *istina* was nothing – it was relative and it could easily be changed: only *pravda* was absolute. It seemed to me, as it must do to millions of others who have not been through this school, hard to understand how a philological distinction could have such an effect on the lives of so many. But in fact this small difference – this tyranny of *pravda* over *istina* – was the lever by which white was turned into black; no such dialectic had existed since the Inquisition. The notion of *pravda* was the basis of power (Berger, 1971, 52-53).

Berger illuminates not just the deadly split in Soviet ideological thinking but, equally, the intellectual schizophrenia, the intellectual and moral relativism and the dishonesty that characterises so much of the multicultural agenda. His use of 'the right truth' is, in essence, what feminists and postmodernists wish us to understand by the term politically correct. Biological differences between men and women – an insignificant *istina* as far as feminists are concerned – must not be permitted to undermine the struggle for *pravda*, the great truth, in this case, the absolute equality of condition between men and women and the absolute equality of all outcomes.[14]

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[14] Martin Dewhirst has also made the connection between socialist realism and political correctness: 'I would therefore suggest that pravdivyy and pravdivost' as used in the official definition of Socialist realism mean not so much 'truthful' and 'truthfulness' (when Russians want to insist that some pravda really does correspond to the Western concept of truth they talk about istinnaia pravda) as pravednyi and pravdenost' ('righteous' and 'righteousness' and pravil'nyi and pravil'nost' ('correct' and 'correctness', in other words 'morally and ideologically

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Czesław Miłosz has written at length on the excruciating moral and intellectual damage done to Polish writers who, accustomed to writing before the imposition of Soviet rule, now had to adapt to socialist realism. Of one colleague who fell foul of the new method, Miłosz writes that 'a politically correct theme would not have saved him from the critics' attack had they wanted to apply orthodox criteria, because he had described the concentration camp as he personally had seen it, not as one was *supposed* to see it' (Miłosz, 1985, 126, emphasis in the original).[15] To the insights of Berger and Miłosz in this area can be added those of Arthur Koestler (*Darkness at Noon*, 1940), George Orwell (*1984*, 1949) and Alain Besançon, (*The Falsification of the Good: Soloviev and Orwell*, 1994).

One writer of exceptional importance for this theme in twentieth-century Russian literature is Andrei Platonov whose novel, *The Foundation Pit* (1929-1930), is a study of alienation brought on by the ideological corruption of language. As the slogans, bureaucratese, jargon and a never-ending flood of acronyms overwhelm the language, Platonov's characters lose the ability to communicate with one another. Crushed by the weight of ideology (and anticipating the distinction made by Berger between *istina* and *pravda*), one character ponders whether 'truth [*istina*] is a class enemy' (Platonov, 1998, 332). Words there are aplenty in this politically correct cacophony but their meaning has been appropriated by the party. Language is a series of ideological rituals. Denied the means to express their hopes and fears, Platonov's characters regress to a state of fearful isolation. Silence becomes the only effective form of communication. Corrupting language, communism destroys community, the very thing that communists purport to be creating. Well before Orwell, Berger and Mi_osz, Platonov identified and satirized the attempt made by the party to change reality by a conscious policy of making certain words and ideas redundant, or politically incorrect, and replacing them with appropriate or politically correct ones. In both manifestations – that depicted in Platonov's novels, or that favored by postmodernists – the intention is to use language as a

right' or, as we might say these days, 'politically correct'. See 'Soviet Socialist Realism and the Soviet Censorship System' (Chung et al, 1996, 26). The Russian word for government (pravitel'stvo) and the verb to govern (pravit') are also etymologically linked to the notion of pravda: those who know this 'higher truth' are those fit to govern.

[15] Valentin Turchin records what happened to Grigory Pomerants, a Soviet dissident writer: 'Someone complained to the Party Bureau about an "incorrect ideological line" at the seminar, and I was summoned to give an explanation' (Turchin, 1981, 12).

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weapon. In this scenario language is not primarily used to communicate ideas but rather to signal the speaker's willingness to submit to the politically correct register (gay, for example, in place of homosexual or gender in place of sex). Language is power not for the masses but for the party intellectuals who are to instruct us on correct usage. Contemporary political correctness pursues the same policy by dominating public discourse and creating a climate of fear such that "incorrect" opinion is declared illegitimate, extreme or racist and so on.

The Sino-Soviet Schism, Mao and the Cultural Revolution

Correct thinking in Chinese communism owes much to Mao's political personality and ambitions and, as in the case of Lenin in the Soviet variant, arises in part from the need to impose a general line on the party cadres and the population as the party attempted to modernise the country. Factors peculiar to China would be the role of face and the legacy of Confucianism (Lin, 1991, Lipman & Harrell, 1990). From Confucianism comes the custom in Chinese culture whereby disciples of some revered master, in the first instance Confucius, would collect the master's sayings (*yü-lu*) for posterity (Chuang, 1968, 7-8). *The Quotations from Chairman Mao Tse-Tung* (*Mao chu-hsi yü-lu*) have been put together with the Confucian tradition in mind.

The Soviet precedent also helps to explain why Mao wanted to launch the Great Proletarian Cultural Revolution.[16] In *Dr Zhivago*, one of Pasternak's characters, looking back at the 1930s, argues that collectivization was such a calamity that the party could not acknowledge it and so in order to hide the failure all means were used to force people to lose the habit of independent thought and judgment (Pasternak, 1957, 519). Precisely the same problem confronted Mao after his policies caused a massive famine which in terms of human suffering, misery and the numbers of dead, has no parallel in human history. Objective reality, that is the deaths of millions by starvation, had to be forced from people's minds by terror. So the stage was set for this great and ancient nation to descend into self-inflicted madness goaded on by Mao and his teenage thugs. The masses, that category of amorphous, docile worker ants so beloved of Marxist theorists everywhere, had to be kept in a state of permanent frenzy and suicidal enthusiasm. Acting not

[16] Note the changes from the original "Great Proletarian Cultural Revolution" in the 1960s to "Cultural Revolution" in the 1970s & 1980s to, currently, "cultural revolution" (Schoenhals, 1992, 109).

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thinking was the requirement of the time.[17] Scepticism was a heresy, and so by one of those paradoxes in which communism abounds, correct thinking meant in essence not thinking at all.

Jing Lin's study of the political, psychological and educational factors which prepared the Red Guards for the violence they inflicted on their fellow Chinese during the "ten-year calamity" (*shinian haojie*), as the cultural revolution is now referred to, confirms the extreme emphasis on all types of correct behavior and thought in Maoism. Communist ideology was sacrosanct, 'the only correct official ideology' (Lin, 1991, 40).[18] As in the case of its Soviet counterpart, the Chinese mass media's main task was to indoctrinate the masses with "correct attitudes, ideas and beliefs"(Lin, 1991, 57). And the main task of the highly centralised education system was to inculcate 'the correct political orientation' (Lin, 1991, 79). Another parallel with Soviet Russia (and National Socialist Germany) was the party propaganda machine's use of young role models specifically aimed at the Red Guards (see, for example, Pavlik Morozov in the Soviet Union and Horst Wessel in Nazi Germany). The Chinese exemplar was Lei Feng, a young communist whose diary inspired the learn-from-Lei-Feng movement in which the Red Guards would keep diaries and hand them in to teachers 'for help in correcting possible deviations' (Lin, 1991, 122). Attitudes among the Red Guards were comparable to those identified by Berger regarding *istina/pravda*: 'While being absolutely obedient to Mao and aggressive against the "class enemies", the Red Guards treated the proletariat as embodying a concept of "justice", and idea that represented correctness' (Lin, 1991, 156).

Extracts from *Important Documents on the Great Proletarian Cultural*

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[17] Jung Chang, the author of Wild Swans: Three Daughters of China, who lived through the cultural revolution admitted that on hearing of Mao's death she had to hide the lack of 'correct emotion' (1993, 658). The expectation that every Chinese was supposed to be stricken with grief on hearing of Mao's death has a parallel with the capricious blood-letting inflicted by the Zulu king Chaka on his people after his mother died. Hundreds, possibly thousands, were executed for failing to make appropriate and prolonged displays of grief. (Baker, 1974, 389-390).

[18] Lin provides confirmation of the broad definition of Soviet political correctness given above. She notes that: '[...] there is in any given situation just one "correct line" of policy, all others tend to lead to ruin, and so on' (Lin, 1991, 70). Michael Schoenhals's study is a painstaking analysis of the extreme importance attached by Chinese Communist Party theoreticians to the use of correct formulations (tifa) and confirms the fundamental approach to language and power shared by both the former Soviet Union and Communist China (Schoenhals, 1992). Thom (1989) in her study of Soviet Newspeak anticipates many of the points made by Schoenhals.

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Revolution, which was published in 1970 at the peak of the cultural revolution, as well as those from other official Chinese sources, confirm Lin's conclusions and, again, the absolutely central role of correctness in all fields of Maoist thought and Chinese communism.[19] If anything centrality understates the emphasis. We are dealing here with a fanatical faith which is impervious to reasoned argument and evidence. The following citations – many more could be cited – require no explanation. They demonstrate an even greater obsession with correctness than that found in Lenin and his interpreters:

[...] 'our Party will always forge ahead victoriously along the correct course charted by Chairman Mao' (FLP, 1970, 75);

'Under the guidance of Chairman Mao's correct line' [...] (FLP, 1970, 65);

[...] 'the great, glorious and correct Party' (FLP, 1970, 66);

'Long live the great, glorious and correct Communist Party of China!' (FLP, 1970, 106);

[...] 'the correct kind of leadership' (FLP, 1970, 134);

'Without correct literary and art criticism it is impossible for creative work to flourish' (FLP, 1970, 230);

'China is a great socialist state of the dictatorship of the proletariat and has a population of 700 million. It needs a unifying thought, revolutionary thought, correct thought. That is Mao Tsetung Thought. Only with this thought can we maintain vigorous revolutionary drive and keep firmly to the correct political orientation' (FLP, 1970, 240);

'Red Guard fighters, revolutionary students, the general orientation of your struggle has always been correct' (FLP, 1970, 257);

[...] 'the correct line of Chairman Mao and the bankruptcy of the bourgeois reactionary line' (FLP, 1970, 274);

'Only by thoroughly criticizing and repudiating the bourgeois reactionary line and eradicating its influence can the line of Chairman Mao be carried out correctly, completely and thoroughly' (FLP, 1970, 276);

[19] Note, for example, the title of Mao's work published in 1957, On the Correct Handling of Contradictions Among the People. We are told that the Talks at the Yenan Forum on Literature and Art gave artists the 'correct orientation' (FLP, 1970, 235).

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teachers are to understand the 'correct line' of Chairman Mao (FLP, 1970, 279);

'Long live the great, glorious and correct Communist Party of China' (FLP, 1970, 290);

'Not to have a correct political orientation is like not having a soul' (FLP, 1977, 405);

'Mao Tse-Tung's thought is the life-line of our Party, the sole correct supreme guiding thought of our Party, also the sole correct supreme guiding thought of the international communist movement' (Union Research Service, 1968, 121);

'Incorrect expressions must be eliminated from newspapers and journals', *Editor's and Writer's Friend*, 1984 (cited in Schoenhals, 1992, 76).[20]

Political correctness in Chinese communist ideology must also be interpreted against the background of the Sino-Soviet split. Chinese communists found it unforgivable that Khrushchev could denounce Stalin and promulgate a doctrine of peaceful coexistence with the West which implied either a suspension of, or a retreat from, the class struggle. Scandalised by such ideological revisionism – though this did not prevent China from welcoming President Nixon in 1972 – the Chinese communist party saw itself as the one true bastion of ideological purity. Khrushchev was a dire warning of where incorrect thinking would lead. Extreme ideological vigilance was needed if China was not to lapse into revisionism as well. Some sense of what Soviet revisionism meant for communist China can be understood in the Communique of the 11th Plenary Session of the Chinese Communist Party 8th Central Committee (August 12th 1966). According to the communiqué 'the CPSU [Communist Party of the Soviet Union] has betrayed Marxism-Leninism, betrayed the great Lenin, betrayed the road to the great October Revolution, betrayed proletarian internationalism, betrayed the cause of the international proletariat and of the oppressed peoples and oppressed nations, and betrayed the interests of the great Soviet people

[20] An example of an incorrect formulation among a majority of Western scholars would be the use of "totalitarian" to refer to the Soviet Union. To quote Martin Malia: 'In the introduction to each new monograph, the totalitarian model was ritually excoriated, and the "T-word" was banished from polite academic discourse, its used viewed as virtual incitement to Cold War hostility towards the "Evil Empire". By the onset of perestroika in 1985, a pall of political correctness had settled over the field' (Malia, 1994, 12).

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and the people of the socialist countries' (*Documents*, 1971, 223). So concerned was the Chinese Communist Party leadership with the Soviet line that in the 1960s it established an Anti-Revisionist Writing Team whose specific task was 'to compose authoritative denunciations of Soviet-style "revisionism" in the name of the CCP Central Committee' (Schoenhals, 1992, 63).

Internal dissenters, or those deemed to be traitors and revisionists, were subjected to brutal treatment by the state media – literally trial-by-media – especially where the victim was a high profile member of the party. Thus, in a report of the Chinese Communist Party's Central Committee, Liu Shao-Chi, who had disagreed with Mao, was referred to as a 'renegade', 'traitor' and 'scab' (*Documents*, 1971, 243). Lesser figures would be attacked at local level and those deemed to be guilty of serious deviations from the party line could face the dreadful pressure of a struggle session in which they were subjected to prolonged physical and psychological abuse often in front of large audiences and were called upon to repent their crimes (Chang, 1993, Lifton, 1961, Lin, 1991, Saunders, 1996, Thurston, 1988, Wu, 1994). Other methods were rectification campaigns designed to correct 'bad thoughts', and a variation on the struggle session known as unity-criticism-unity, which involved breaking the victim down, "deconstructing" him, as it were, and then putting him back together again.

Worse still was the thought reform, *si xiang gai zao*, that was practised in the Chinese concentration camp system, the *laogai*, or 'Auschwitz of the mind' in Harry Wu's startling expression (Saunders, 1996, 73). 'For the Chinese communist', notes Wu, 'the aim is not to destroy him [the prisoner] a hostile element physically through violence, but to destroy him mentally and ideologically, while threatening him with violence' (Saunders, 1996, vii).[21] Certain forms of physical abuse are used in conjunction with thought reform, as in the degrading ritual of *bai lao men* ('paying respects to the cell god'), which involves a new prisoner's being made to suck up excrement from a bucket through straws and then say that the excrement tasted delicious (Saunders, 1996,

[21] In their study of psychiatric abuse in the Soviet Union Bloch and Reddaway considered the possibility of such abuse's occurring in other communist states. Of China they noted:'As for China, no reliable evidence of psychiatric abuse is available to us. But the apparently widespread practice of trying to cure mental illness by inculcating Maoism into patients so that they should think "correctly" arouses the suspicion that psychiatrists may also be involved in the "thought reform" practised on dissenters in labour camps' (Bloch & Reddaway, 1977, 466). Twenty five years later the evidence for such psychiatric abuse is detailed and abundant.

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41).

Compelling prisoners to act out their roles in what to the Westerner appears to be the theatre of the absurd plays a major role in breaking the prisoner's mental resistance. The more grotesquely at odds with the truth, the more blatant the distortion and accusation, the more powerful the intellectual violence done to the victim. Agreeing to some blatant fabrication, the victim damages and eventually destroys his ability to think for himself, which is consistent with the Maoist view that: '"Self" is the origin of all evil' (Union Research Service, 1968, 225). His inner self destroyed or broken, the victim ceases, finally, to be an independent, thinking human being.

Political Correctness and the New Left

Mao's Great Leap Forward inspired and encouraged a new generation of 'political pilgrims' to suspend their critical faculties in much the same way that an earlier generation of Western communists and fellow travelers had embraced Stalinism (Hollander, 1981). Mao's cultural revolution also provided a convenient backdrop to the Vietnam war protest and the wave of student rebellion and resentment directed at white middle class society.

The New Left itself was a product of the 1960s. Its message was simple: 'All power in the world is oppressive, and all power is usurped. Abolish that power and we achieve justice and liberation together' (Scruton, 1985, 7). 'Impatient for doctrine' (Scruton, 1985, 7), this was a generation ripe for the teachings of Lenin and Mao and much in Althusser, Derrida, Foucault, Gramsci, Galbraith and Marcuse. Yet, for all the pose of rebellion, the break with the existing order and hierarchy, this was a movement that craved submission to authority, and the more hostile the New Left was to bourgeois mores and behavior, the more outrageous its claims, the more tightly it controlled the minds of its youthful followers.

Althusser can lay claim to being the master sorcerer of the New Left whose manipulation of language entices the unwary, leading to intellectual confusion and oblivion. From Foucault the radical derives his obligatory paranoia and the belief that the boundary between the deviant and the natural is a monstrous bourgeois fiction designed to perpetuate bourgeois rule (an echo here perhaps of Lenin on the free press). Derrida teaches him the need to deconstruct language and literature which prepares the way for attacking the canon of Western literature (the hegemonic discourse of the white, heterosexual ruling

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class). Gramsci stressed the importance of revolutionary theory: 'Gramsci did for the sixties what Lenin and Stalin had done for the thirties and forties: he convinced his following that revolutionary practice and theoretical correctness are identical concerns' [...] (Scruton, 1985, 77). And while attacking the economic practices of the West, the author of *The Affluent Society* comments that: 'In the communist countries, stability of ideas and social purpose is achieved by formal adherence to an officially proclaimed doctrine. *Deviation is stigmatised as "incorrect"*. In our society, a similar stability is enforced far more informally by the conventional wisdom' (Galbraith, 1969, 17, emphasis added).[22] Galbraith's concluding sentence is a precise example of the intellectual relativism that did so much to create and to perpetuate the view that Western societies and the Soviet Union were one and the same, even indeed, that they were converging (Whereupon the Soviet Union in a fit of curmudgeonly ingratitude towards its Western friends and fellow travelers collapsed). Marcuse was probably the most influential of all the New Left thinkers. His manipulation of language – one better known example being "repressive tolerance" – continues the assault on empirical reality pioneered by Lenin.

These thinkers and others have contributed in varying ways to what is probably the striking feature of the New Left, and one that sets it apart from conventional Marxists[23]: the extraordinary emphasis placed on culture and language; the belief that language is the essential lever of power. Mao whose influence was by no means confined to mainland China has, one suspects, been hugely influential in this respect. To quote Chuang:

> Ever since the Communists came to power nineteen years ago, every political campaign in China has been simultaneously a semantic campaign as well, introducing or reviving a plethora of shibboleths and

[22] This is taken from the 1969 revised edition. In the 1963 edition of Galbraith's book, the underlined text is absent.

[23] Though, as Etkind points out, the belief that human beings can be remoulded is fundamental to Soviet Marxism: 'Man is seen as plastic material which is suitable for creation. He has no natural qualities, he is totally immersed in culture and is formed by the purposeful influences of milieu, society and science. In other words, man's nature is no longer seen as nature. It is seen as culture, the result of mankind's efforts or those of its best representatives. Nature-as-culture loses its inherent qualities – primacy, innateness and sense of detachment from others, the fundamental independence of its efforts. What is made by people, can be remade. Man's nature becomes an object of purposeful manipulations' (Etkind, 1993, 184, emphasis in the original).

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> slogans with such determination and concentration that is sometimes borders on verbomania or graphomania. Mao strikes one as a true believer of word-magic... (Chuang, 1968, 47).

"Word magic" explains why the contemporary notion of political correctness exerts such a beguiling influence on so many discrete groups and factions. For, if money is power then some will have more power than others. If, however language is power, then anyone can partake of power and groups and factions who otherwise might have very little to say to one another, now find that they are united in their desire to impose new linguistic norms on mainstream bourgeois society which, it is alleged, has traditionally marginalised them. This new alliance, or rainbow coalition, has a ready ally in the universities, print and broadcast media and public sector bureaucracies. The universities in particular are uniquely placed to be the new brokers of language and culture, since it has been New Left ideology ensconced in our universities and on its fringes that has turned the world into language.[24] In particular, the universities are crucial to the New Censorship Paradigm (Ellis, 2000). No longer the guardians of our cultural heritage, they actively seek to "deconstruct" it.

Instructed by New Left theoreticians that they are victims, that language is power and better still that it has been "constructed" to serve the hegemony of the white heterosexual male, blacks and women now feel that they have the moral authority to impose cultural and linguistic change, that is "the correct orientation". For the "repressed" and their allies this is an intoxicating message. Instead of resistance, they have all too often found a willingness on the part of mainstream culture to submit to their linguistic and relativist demands. Concessions of any kind earn no good will at all. On the contrary, they tend to confirm the radical in his contempt for the society around him, reinforcing his suspicion that society was rotten all along (why else do they make concessions?) and encouraging him to make ever greater demands for institutional and cultural change.

Comparative Summary

The main features which Western political correctness derives from its Soviet and Maoist variants can now be summarised as follows:

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[24] I have borrowed Thom's remark about the effect of Marxism-Leninism on language: 'Ideology turns the world into language' (Thom, 1989, 87).

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i. No limits to the competence of politicians and activists to remould human societies are recognised. There is no area of human cultural endeavour which cannot be "deconstructed" and improved. All versions of political correctness are genuine manifestations of ideology in the definitions provided by Apter, Arendt, Francis, Heller, Kirk and Lin (Apter, 1964, Arendt, 1973, Francis, 1999, Heller, 1988, Kirk, 1984, Lin, 1991);

i. Political correctness denies objective truth, or something close to it. See the *istina/pravda* split identified and discussed by Berger.

i. Only certain types of art, literature, scientific research and thinking are permissible. Soviet ideologues believed, mistakenly, that they could co-opt the tradition of nineteenth century Russian literature for their own ends. Rather than acknowledging the grandeur of the great canon, postmodernists have chosen to attack the canon with the aim of destruction through levelling. Both Western and Soviet/Maoist versions accept the need for truth and facts to be censored if this conflicts with politically correct aims. When Harvard professor, Barbara Johnson, as part of the AWARE campaign (Actively Working Against Racism and Ethnocentrism), declared that 'professors should have less freedom of expression than writers and artists, because professors are supposed to be creating a better world' (Beard & Cerf, 1992, 97), she reveals her full commitment to the spirit of Soviet socialist realism and Leninist *partiinost'*. Whereas the Soviet communist party was brutal in regard to censoring forbidden manuscripts, killing and imprisoning writers without hesitation, more diverse approaches are favoured in the West. The following can be noted: outright suppression of manuscripts by a publisher, even when the author has been earlier informed that publication will proceed (as in the case of Chris Brand's book on the *g* factor); intimidation of publishers by left-wing extremists who often adopt a guise of "anti-racism" or "anti-fascism"; failure or refusal on the part of university librarians to consider certain titles for collection development (a very effective long-term form of censorship); refusal to review certain books; ignoring a book even when it sells well; organising a discussion panel to attack an author or publication, ensuring that the author under attack or advocate of certain views has minimal time to respond. This is a favourite technique of the British Broadcasting Corporation, Britain's state-owned television station, when a politically incorrect opinion or book cannot be ignored since to do so merely draws attention to

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the silence of the state media; ideological and political attacks on the institution of free speech, frequently based on the straw man fallacy that free speech is not an absolute (no man-made institution is);

i. Use of the print and broadcast media to vilify and to demonise those who break any taboos prescribed in paragraph iii. This is important in the Western version since the totalitarian violence used by the Soviet Union is not currently an option;

i. We find exceptional importance attached to the need to establish and to maintain correct theoretical approaches (Chuang, 1968, Chung *et al*, 1996, FLP, 1970, Khrushchev, 1959, Lenin, 1901, 1902, 1905 & 1906, *Resheniya*, 1967, Schoenhals, 1992, Thom, 1989). For contemporary political correctness domination of discourse – symbols, words and usage – is all important (Goldberg, 2002, Stein, 2000);

i. The role of a demon figure either the class enemy or currently the white, heterosexual male;

i. Political correctness has, to paraphrase Thom, turned the world into language. And strives for absolute control over the dictionary;

i. Envy is exploited to an unusual degree;

i. Freedoms guaranteed in Western societies are exploited in an attempt to destroy those freedoms while arguing that these freedoms are a sham (free speech, equality before the law, freedom of assembly);

i. The Soviet and Chinese Communist Parties seized power and proceeded on the basis of the *tabula rasa* or Year Zero. In the West we are experiencing a process of slow and incremental Sovietization.

Conclusion

Emerging into the wider public domain at the end of the 1980s and early 1990s, the term political correctness, much to the surprise and chagrin of those who used it, rapidly became associated with the Pharisee and the tyrant. As early as 1992, the compilers of *The Official Politically Correct Dictionary & Handbook* were quick to spot the danger and tried to blunt the attack, warning their readers that: 'The term "politically correct", co-opted by the white power elite as a tool for attacking multiculturalism, is no longer "politically correct"' (Bear & Cerf, 1992, 87). Attacking political correctness with some vigor in

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Culture of Complaint, Robert Hughes nevertheless felt obliged to balance his criticisms with the invention of "patriotic correctness", which, he assured us, was as bad as political correctness (Hughes, 1993, 28).

Richard Burt's explanation of the origins of political correctness as something that was 'used ironically against other leftists as a critique of moralism and preachiness' (Jones, 2001, 1901) also shows a certain lack of imagination and understanding of what is at stake. For, if political correctness was simply a question of ridiculing "preachiness" or adopting poses then one could just ignore it. On the basis of the material cited and discussed here political correctness goes way beyond mere finger-wagging. In its Maoist variant it represents an extreme form of intellectual violence designed to break an individual's will and compel him to submit to the will of the collective (community). Harry Wu's insight into his own ordeal in the *laogai* recognises the brutal simplicity of what his tormentors were trying to achieve:

> Suddenly the traditional practice of footbinding came to mind. We have switched to headbinding, I thought. It's no longer the fashion to bind a woman's feet, but they bind a person's thoughts instead. That way the mind can't move freely. That way ideas all take on the same size and shape, and thinking becomes impossible. That's why they arrested me. That's why they want to change me, that's why they force me to reform.
>
> (Wu, 1994, 87).

Western versions lack concentration camps for re-education and reform through labor, yet they indisputably involve wholly unacceptable levels of censorship and intellectual violence to those who dissent from multicultural orthodoxy. Race awareness courses in American universities are just one example (Kors, 2000).

Moreover, the threat and use of physical violence is always there if the left feels that some recalcitrant academic needs to be taught a lesson. Orchestrated mob rule which was used to intimidate professors Michael Levin, J. Phillipe Rushton, Chris Brand, Arthur Jensen and Hans Eysenck, is straight out of the Maoist canon of street thuggery deployed against Chinese intellectuals during the cultural revolution. Burt's citing others to the effect that no academics have been prevented from teaching or dismissed by any university administration is disingenuous, and demonstrably wrong (Pearson, 1997). In the United Kingdom, Ray Honeyford, the headmaster of a school in Bradford – an inner-city area with a large concentration of schoolchildren from the

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Indian sub-continent – was subjected to a sustained campaign of physical violence and bureaucratic intimidation because he highlighted the failures of multicultural education (Honeyford, 1984 & 2001). Some twenty years later he has been thoroughly vindicated, as some of his erstwhile critics and the government now admit.[25] Yet, this is small comfort to a decent man whose career was destroyed in its prime. The most recent example was the death of Pim Fortuyn, a former Dutch university professor, who was murdered by an extremist because of his views.

Furthermore, anyone who has taught at an American university can testify that enormous psychological pressure is brought to bear on academics and students to submit to the general line on all issues dealing with multiculturalism, race and feminism. The atmosphere is not one which is conducive to asking awkward questions. It is one of coercion. As Robert Lifton has noted in his pioneering study of thought reform: 'The message of coercion is: you *must* change and become what we tell you to become – or else. The threat embodied in the "or else" may be anything from death to social ostracism, any form of physical or emotional pain' (Lifton, 1961, 438, emphasis in the original). Nor, given the way tenure is awarded in American universities, are we likely to encounter many dismissal cases. Any academic who publicly or privately dissented on issues relating to multiculturalism would be placing his chances of securing tenure in grave jeopardy. Dissent would lead to negative reviews in the tenure process, the result being denial of tenure, an administrative pre-emptive strike, in effect *de facto* dismissal. Most academics, even with tenure, prefer to stay silent. In the strict sense of the term the question of dismissal does not therefore arise.

That said, attempts have been made to get university administrations to fire tenured faculty for expressing politically incorrect opinions (Pearson, 1997). So far these attempts appear to have failed but they have caused a great deal of stress to the victims and resulted in much emotional and intellectual energy being wasted. In view of the legal security that tenure affords in American and Canadian universities, one is tempted to conclude that university administrations that attempt to fire faculty, do so not in the hope that they will succeed – though that

[25] The article in which Ray Honeyford drew attention to what was happening in his school was first published in *The Salisbury Review* in 1984. The race riots in Oldham, Burnley and Leeds in 2001 were a direct consequence of trends which Honeyford had earlier identified. The article was reprinted in 2001 ('Education and Race – An Alternative View', *The Salisbury Review*, vol 20, No 1, 2001., pp.9-12.

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would be a desirable outcome – but rather with the express intention of causing the victims as much misery as possible. If true, and one suspects that this would be difficult to prove in a court of law, then it amounts to a university administration's abandoning the presumption of innocence, a vital feature of Western jurisprudence. The mere fact of your criticising multiculturalism renders you "guilty" and liable to punishment.

Nor were the debates over political correctness in the early 1990s something peripheral to the future of higher education, as Burt has also suggested, but something fundamental. Whatever cause the left-wing radical supports in the rainbow coalition – and these days he need not be very left or very radical – his relativist approach to knowledge, his commitment to the 'truth that ought to be' rather than the one that is, his barely concealed loathing of individual excellence, the belief that in the collective or community resides superior wisdom, his loathing of free speech (which he, naturally, exploits to the full) and his ready acceptance of a completely politicised education system, are demonstrably the offspring of communist systems. Political correctness provides the deep structure, the base on which the superstructure of multiculturalism *et al* can be raised. Political correctness, in other words, is something serious.

Some of Burt's points have been taken up by Helena Kennedy, a well known left-wing Scottish lawyer and supporter of things multicultural and feminist. As recently as May 2002, she restated views made in the mid-1990s, namely that: 'Political correctness is an invention of the right' (Robinson, 2002, 34). There is plenty of evidence, as I have tried to demonstrate in this article, that by the time the Soviet Union collapsed in 1991, and in any case well before the vast majority of Westerners, whatever their political allegiances, had heard of it, political correctness was established as an indispensable element in the theoretical struggle of Marxism-Leninism, Maoism and the New Left. Correctness after all, that is the "correct" analysis of Western, bourgeois societies and the "correct" solutions to their ills, has always been the basis on which the Left, new or old, has staked its claim to order our lives and rebuild our societies in the name of "social justice". Kennedy's assertion was made either out of ignorance or, more probably, because she understands only too well that the demonstrable and verifiable debt owed by multiculturalism and feminism to Lenin and Mao does nothing to make the public congenial towards the whole multicultural experiment and its oppressive legislation.

Responses other than direct denial can also be noted. The fre-

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quency with which we encounter terms such as "correct orientation", "correctness", as well as the use of the adjective and adverb "correct" and "correctly" in official Chinese sources underlines the extraordinary efforts made by the Chinese communist party to control people's thoughts and feelings. Yet the studies consulted for this article betray a marked reluctance to draw conclusions about the communist origins of political correctness and the manner in which it has migrated to the West. Not a single work, cited in this article, and which was published after 1990, that is at the time when the debate over political correctness in the West was raging, has actually discussed the connection between Maoist notions of correctness and the American campus, even if only to deny or to attack any connection. With the exception of Lin (1991) and Schoenhals (1992)[26] – Lin leaving us in no doubt about the importance of correct thinking in the ideological preparation of the Red Guards – Lipman & Farrell (1990) and Saunders (1996) have tended to avoid using "correct" and "correctness" in their discussion of the ideological pressures applied to Chinese during "the ten year calamity". Where references to "correctness" are made, as in Chung *et al* (1996), then the authors conspicuously refrain from making any connection with the West (Bichler, 30-43, Chung, xvi, Chung & McClellan, 1-22, Wallace, 78-87, Lan, 88-105, Chung *et al*, 1996). Only Dewhirst comes close to making a connection in a brief footnote (Dewhirst, Chung *et al*, 1996, 26). Chung herself in the introduction clearly identifies the problem of political/ideological correctness in communism yet studiously avoids making any parallels with its contemporary use by Western leftists. However, she does permit herself a parallel with China's past as in 'Confucian correctness' (Chung *et al*, 1996, xvi). Now it is somewhat odd that she can make a parallel with a sage who lived five centuries before the birth of Christ yet not make the more obvious and immediate one with the 1990s. "Confucian correctness" misleads in the same way that "patriotic correctness" does, since it implies that one form of "correctness", be it "Confucian", "patriotic" or "political" is no better or worse than any other. This is the relativism of political correctness itself at work here. To blur these distinctions is to destroy them, or to weaken them to the extent that one can argue, as Galbraith does, that, Western

[26] Marred in places by a failure to recognise some fundamental differences between the USA and the two communist superpowers (the former Soviet Union and Communist China), Schoenhals's book, in spite of the author's best efforts to avoid making any parallels with feminism and multiculturalism, is essential reading for understanding the debt owed by Western versions of political correctness to Mao and his successors.

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'conventional wisdom' and communist political correctness are the same thing. If we proceed from this leftist assumption, then we could argue that there is no "connection" to be made since both systems are not separated but constitute one giant politicised whole. On this basis not to highlight the evolution of Soviet political correctness, via Maoism to the West's universities and from there to other institutions, is not to ignore the problem, for there is no problem to be ignored. Political systems and empires from Rome to American democracy, the leftist tells us, have always imposed conformity and insisted on correct behavior. True enough. And what of conservatives, do they not tell us that liberty and 'right reason' go together? (Kirk, 1996, 3-4, Weaver, 1948, 138). Why, then, asks the leftist, should communism and the left be singled out for opprobrium? The answer is that Marxism-Leninism, from which political correctness is derived, manifests a completely different order of correctness and application from any other political system. The danger arises from the totalitarian aspirations of Marxism-Leninism-Maoism. All human existence is politicised and everything is judged according to political/ideological criteria and corrected or destroyed accordingly. If a man's mind cannot be "rectified" or freed from "incorrect" thoughts then he ceases to be a man. He becomes an "enemy of the people". Extermination is justified, demanded in fact by the logic and ideology of class war, as is absolutely clear from the abominations of the Gulag and the *laogai*. The role of ideology – Marxism-Leninism – is crucial, as has been fully explained by Solzhenitsyn:

> Macbeth's self-justifications were feeble – and his conscience devoured him. Yes even Iago was a little lamb too. The imagination and the spiritual strength of Shakespeare's evildoers stopped short at a dozen corpses. Because they had no ideology. Ideology – that is what gives evildoing its long-sought justification and gives the evildoer the necessary steadfastness and determination. That is the social theory which helps to make his acts seem good instead of bad in his own and others' eyes, so that he won't hear reproaches and curses but will receive praise and honours (Solzhenitsyn, 1991, 173-174).

Another anomaly is that none of the works consulted includes any references to political correctness in the indexes. This squeamishness explicitly to highlight the connection is perhaps an indirect acknowledgement that political correctness on the American campus and elsewhere does indeed owe a great deal to Mao and his antecedents. It is perhaps born of the fear that any discussion of the connection will

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provide ammunition for conservative opponents of multiculturalism. Whatever the reason, the lack of any discussion at a time when arguments over political correctness were taking place in the US and Britain, and when some of the authors were working on books about communist China's cultural revolution, is highly unusual to say the least.[27] In the Russian context, the same is true of Ruder and Tolstaya (Ruder, 1998, Tolstaya, 1998).

A more recent trend, and one more effective than Kennedy's denials, is to treat political correctness with a certain disdain or even silence without actually denying its left-wing credentials, and without renouncing the methods and goals of political correctness and multiculturalism. The BBC, Britain's state television and radio network, is especially adept at this sort of Orwellian deceit, appearing to state one thing but encouraging behavior and attitudes which are entirely consistent with politically correct objectives even if not referred to as such. Many Russians, Poles, Czechs, Bulgarians and East Germans who revered the BBC as a surrogate domestic broadcasting service during the Cold War will balk at such apparently harsh comments. Yet when it comes to the ugly side of multiculturalism in Britain today, and much of it is very ugly indeed, the BBC lacks that commitment to objectivity and truth, which once made it so feared by the men in the Kremlin. When Greg Dyke, who is appropriately known as the BBC's Director-General, apologises for the fact that the BBC is 'hideously white', one realises the degree to which politically correct ideas now control and shape the BBC. To paraphrase one of its first Director-Generals, the BBC has become a social menace of the first magnitude.

Despite the determined efforts of liberals and left-wingers to counter the association of political correctness with their favored causes, the perception remains among the public that political correctness is essentially a creation of the left. The historical evidence, some of which I have marshaled here, supports that association, though even now few seem to realise just how strong the Soviet legacy is. Enriched by his successors – Soviet, Maoist, feminist, postmodernist and most recently multiculturalist – political correctness still bears the stamp of Lenin, the founder of twentieth-century totalitarianism. The empire Lenin helped

[27] In The Falsification of the Good, Besançon comments on Orwell's term crimestop: 'it [crimestop] includes the ability not to perceive logical errors and not to comprehend the simplest of arguments if they are against Ingsoc, and, inversely, to have an aversion to any train of thought capable of leading in an undesirable direction. It is "protective stupidity"' (Besançon, 1994, 119). Is this an explanation?

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to build is, thankfully, no more. Yet one hundred years after his tract in revolutionary subversion, *What is to be Done?*, was first published, his ideas still command a great deal of loyalty. Ideas do indeed have consequences, as Richard Weaver has argued (Weaver, 1948). Contemporary versions of political correctness are Lenin's revenge.

To conclude I offer an allegory. It is pessimistic and belongs to the genre of low-budget horror films. Imagine a giant arachnid, defeated and mortally wounded, which in its death throes, manages to ejaculate a stream of spores. The victor, savoring his hard won triumph, fails to see that the spores have landed on his body. If not decontaminated they will begin the process of his metamorphosis into the very monster he has just vanquished.

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The 1998-2001 Legal Struggle between the South African Government and the International Pharmaceutical Industry: a Game-Theoretic Analysis

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The authors analyze the 1998-2001 legal and public relations dispute between the South African Government and the Pharmaceutical Manufacturers Association over the former's attempt to over-ride patent rights. On final settlement the Government claimed 'victory', without demurral from the other side, despite conceding the very issue that had prompted legal conflict in the first place. The authors conclude that the success of HIV/AIDS activists in publicly spinning the original court case as a battle over access to HIV/AIDS therapies complicated the game for both the Government and the PMA. The resulting threat of rising public demonisation increased the public relations cost to the PMA of pursuing its suit. At the same time, the value to the Government of securing the right to compulsory licensing diminished, given its desire not to become responsible for antiretroviral provision under *any* legal regime. For public relations reasons, however, the Government could not directly reveal this preference. Maintaining this as private information also gave it a strategic advantage over PMA, one which it used to extract the PMA's non-demurral on the credibility of its public claim to 'victory'.

Key Words: Pharmaceutical Manufacturers Association, South African Government, Pharmaceutical Research and Manufacturers of America, World Trade Organization, Trade in Intellectual Property Rights Agreement, Nash equilibrium, HIV/AIDS, anti-retroviral treatment, compulsory licensing, parallel imports, public relations, activists.

In 1997, the South African Government passed the Medicines and Related Substances Control Amendment Act (1997-90). Almost immediately, the Pharmaceutical Manufacturers' Association of South Africa (PMA) challenged the constitutionality of the Act, arguing that it contravened South Africa's obligations as a member of the World Trade Organisation. After three years of dispute, the case came to court in March 2001. Within a month the parties settled out of court. To many observers and commentators, the history of this interaction has seemed confusing and contradictory. Popular media commentary generally supposed that the Government would use the Amendments Act to

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increase access to antiretroviral drugs. To date, however, Government policy on drug provision has not matched this anticipation. This fact appears to call forth a less straightforward hypothesis concerning the Government's legal and political strategy with respect to the PMA suit. In the following paper, we propose such an hypothesis by motivating a more complex but realistic utility function for the Government and then showing, by means of game-theoretic analysis, that this would rationalize the actual behavior of both parties.

The paper is organized as follows. First, we provide crucial background information on the context of the dispute with respect to relevant legal and economic issues concerning intellectual property rights, as defined by South Africa's domestic law and as constrained by the Trade in Intellectual Property Rights Agreement (TRIPS), to which South Africa is a signatory. We then describe the actual behaviour of the Government in detail, for the purpose of proposing an hypothesized utility function that rationalizes this behavior in accordance with a 'principle of charity' reflecting a default presupposition of rationality. A similar exercise with respect to the utility function of the PMA is then required, since to rationalize an outcome by means of game theory involves showing that all parties' strategies are in equilibrium. We avoid ascriptions of esoteric or *ad hoc* knowledge to either party. Testimonial evidence is then provided so as to establish the plausibility of our imputed Government utility function. The imputed PMA utility function is justified by industry analysis, concentrated on the financial implications of the various dispute outcomes possible *ex ante*. Finally, we render our model and its assumptions suitably precise, and show that it indeed rationalizes the actual outcome, by modeling it game-theoretically and showing that given our imputed pair of utility functions the terms of settlement were the game's unique Nash equilibrium.

TRIPS provisions

Under the Uruguay Round agreements as signed by South Africa, domestic intellectual property rights laws and administration are required to conform to the minimum standards set by the Trade in Intellectual Property Rights Agreement (TRIPS). In this context, the 1997 Medicines and Related Substances Control and Amendment Act (henceforth, 'the Act') was regarded by some commentators as contentious because it appeared to weaken intellectual property rights protection for medicines to an extent that might contravene TRIPS. Although this concern was expressed with respect to various sections of

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the Act, we concentrate on Section 15C, which appeared to allow for parallel importation and / or compulsory licensing, depending on interpretation.

A medicine is said to be parallel imported into first country *a* if, once it is sold by the patent owner or a licensee in a second country *b*, a third party sells it on into *a*'s market. Parallel imports are viable and economically significant only given significant pre-importation price differentials between the markets in *a* and *b*. Compulsory licenses allow a generic manufacturer to produce a drug before the patent on the brand name drug has expired. Typically, some royalty is paid to the patent owner. Countries that engage in compulsory licensing usually justify it by reference to 'patent abuse' under some interpretation. As will be seen, much of the complexity surrounding the legal argument between the South African Government and the PMA resulted from uncertainty concerning the extent to which the intended purpose of the Act was to facilitate one of these measures or the other, and under what circumstances.

The TRIPS agreement prescribes a minimum standard of intellectual property protection binding on all WTO members. For industrialised nations, intellectual property protection is particularly important because a significant aspect of their comparative advantage in trade lies in their capacity for R&D in high technology fields. Without strong intellectual property protection, it would be difficult for these countries to ensure an adequate return on their and their citizens' investments in new technology. Countries with comparative disadvantages in this capacity have often resorted to pirating. This practice is sometimes defended on the grounds that intellectual property protection can be harmful to developing countries because it raises the price of technology beyond affordability to them. This concern is often compounded by two others in the specific case of medicines. Drug companies may be under-incentivized to invest in research on drugs for developing-country diseases, it is argued, because the value of these markets is relatively small. And since the incentive structure underlying pharmaceutical research is generally analyzed in terms of trade-offs between expected corporate returns on R&D and losses to consumer welfare, it is potentially problematic if losses to consumer welfare due to under-researched diseases are, in general, marginally higher in developing countries than probable such losses in developed countries (McCalman, 1999). In light of disquiet about the TRIPS provisions among developing-country governments, motivated by these concerns, it is generally

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accepted that those of them that sanctioned the inclusion of TRIPS in the Uruguay Round agreement did so for the sake of perceived compensating gains in other parts of the Uruguay package (Wolson, 1997).

Under TRIPS provisions (World Trade Organisation, 1994) a patent confers on its owner exclusive rights for a period of 20 years from filing date (Article 33). During this time, third parties may not make, use, offer for sale, sell or import the product obtained directly from the patented process without the owner's authorisation (28:1b). However, patent owners may choose to grant voluntary licences on the patent (28:2). WTO members can refuse to grant patents on grounds that relate to public health (Article 27), where these apply to inventions whose commercial exploitation needs to be prevented to protect human, animal or plant life or health (27:2), or where they would interfere with provision of diagnostic, therapeutic and surgical methods for treating humans or animals (27:3a) (*TRIPS and pharmaceutical patents: fact sheet*, 2001).

Both parallel imports and compulsory licenses are permitted under TRIPS. The right to parallel import depends on the domestic legal system's definition of exhaustion of rights. Under some codes, rights are exhausted after the first sale of the good, and the patent owner cannot control resale. The TRIPS agreement makes clear that invocations of this 'doctrine of first sale', where legal, cannot be challenged under the WTO dispute settlement mechanism as long as there is no discrimination on the grounds of the nationality of the patent holder (Article 6, *Pharmaceutical patents and the TRIPS Agreement* 2000; *Health Care and Intellectual Property: Parallel Imports,* 2001). TRIPS itself explicitly disclaims authority over national definitions of exhaustion of rights.

Once a patent has been granted, Article 30 states that members may make limited exceptions to the exclusive rights conferred by a patent. However, these must not unreasonably conflict with the rights of the patent holder, taking account of rights of third parties in this context (World Trade Organisation, 1994). Article 31 of the agreement deals directly with the issue of using patents without the authorisation of the rights holder (World Trade Organisation, 1994). Any usage without authorisation needs to be done with reference to the specific laws of the member. Such usage includes compulsory licensing, and use by government for its own purposes. According to the WTO's *TRIPS and pharmaceutical patents: fact sheet* (2001), compulsory licensing is part of "the agreement's overall attempt to strike a balance between promoting

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access to existing drugs and promoting research and development into new drugs". Prior to such recourse, the government in question must make efforts to obtain authorisation from the patent-holder on "reasonable commercial terms". Such efforts must be unsuccessful within a "reasonable period of time". However, this requirement may be waived in cases of "national emergency" or "extreme urgency" or "public non-commercial use". In the first two cases, the patent holder must still be notified as soon as reasonably possible. In the third case, the right holder must be informed immediately if the government knows that a valid patent is in existence (World Trade Organisation 1994: 332; *TRIPS and pharmaceutical patents: fact sheet* 2001).

There are thus measures that allow for fast tracking of compulsory licensing if the government is prepared to offer drugs in the public sector, or to declare a national emergency. This interpretation of Article 31 is in keeping with interpretations in the WTO's own documents, and with the European Union paper (European Union 2001) submitted to the TRIPS council special discussion on intellectual property and access to medicines. If use is made without authorisation, this will be limited to the specific purpose for which it was authorised in scope and duration (31:c), for supply of the domestic market (31:f). Such use will be terminated as soon as the particular circumstances have ended (31:g). The patent holder will be paid "adequate remuneration ... taking into account the economic value of the authorization" (World Trade Organisation 1994: 333) (31:h). All of this will be subject to judicial review in the country having recourse (31:i; 31:j). In cases of anticompetitive practice (Article 40) a country may make use of the patent without a national emergency (31:b) and not necessarily produce only for the domestic market (31:f). The need to correct anti-competitive practice is to be taken into account when determining remuneration to the patent-holder (31:k). According to Love (2001a), production for export is possible under TRIPS if, through local administrative processes, a patent is seen to lead to anticompetitive practice and to create a barrier to access. According to article 44, if use of a patent is granted in terms of article 31 provisions, then the only remedy available to patent holders is that of remuneration in accordance with 31:h.

TRIPS is thus relatively permissive about unauthorised use of patents, especially in the case of HIV/AIDS, which is widely recognised as constituting a national emergency in South Africa. Furthermore, according to Love (2001a) many developed countries (United States, United Kingdom, Ireland, Germany) give government very broad

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powers to authorise use of patents for public non-commercial use (as allowed in section 31:b). Before signing NAFTA, Canada regularly issued compulsory licences for pharmaceutical drugs. Compensation was based upon expected royalties, and was usually set at 4% of the patent holder's sales price.

In practice, however, some countries have been cautious about exploiting this flexibility in TRIPS (*TRIPS Council Meeting on Access to Medicines,* 2001). The US Government has a recent history of applying pressure to South Africa and other countries to apply stronger patent protection (so-called 'TRIPS-plus' protection) than the TRIPS minimum standards, and the clear basis for this pressure is implicit linkage to other trade provisions and measures that give developing world countries incentive to be viewed as 'model WTO citizens' in general.

The Legal Background to the Court Case

In South Africa, patent rights are protected by the Patents Act (1978). South African courts are generally regarded as having placed strong burden of proof on challenges to patentees' rights, and have normally refused to grant compulsory licenses (see below) for alleged patent rights abuses, even though the law allows compulsory licensing under certain circumstances (Wolson, 1998).

The Medicines Act of 1997 was designed to correct some of the distortions of the apartheid years, where private sector health care was very expensive, and the public sector health system charged prices in excess of those in neighbouring countries. Along with other provisions, there were two measures introduced to encourage reductions in prices. The first – generic substitution – entails prescribing a generic drug once the patent has expired on the brand name drug as long as the generic is cheaper. The second is parallel importation. The large pharmaceutical companies vigorously opposed these provisions, arguing that parallel importation was a violation of the Patents Act, which does not allow for exhaustion of rights once a product is sold for the first time. Instead of amending the Patents Act, the government responded by introducing Section 15C to the Medicines Act. This section was designed to override the exhaustion of rights problem by giving the Minister of Health new over-riding administrative discretion. The text of 15C closely follows that of a WIPO document, which was designed expressly to allow only parallel importation. The text of 15C reads as follows:

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The Minister may prescribe conditions for the supply of more affordable medicines in certain circumstances so as to protect the health of the public, and in particular may-

a) notwithstanding anything to the contrary contained in the Patents Act, 1978 (Act No. 57 of 1978), determine that the rights with regard to any medicine under a patent granted in the Republic shall not extend to acts in respect of such medicine which has been put onto the market by the owner of the medicine, or with his or her consent;

a) prescribe the conditions on which any medicine which is identical in composition, meets the same quality standard and is intended to have the same proprietary name as that of another medicine already registered in the Republic, but which is imported by a person other than the person who is the holder of the registration certificate of the medicine already registered and which originates from any site of manufacture of the original manufacturer as approved by the council in the prescribed manner, may be imported;

a) prescribe the registration procedure for, as well as the use of, the medicine referred to in paragraph (b)" (Department of Health, 1997).

Unsurprisingly, it is the clause "The Minister may prescribe..." as well as section 15C (a) that particularly upset the PMA. It argued that this section could be used to justify and sanction both parallel importation and compulsory licensing of certain medicines.

On February 18, 1998, the pharmaceutical company lawsuit by forty-two applicants against the Government of South Africa was filed. (The number of applicants would decrease to thirty-nine by the time the case reached court, Pfizer being the most notable of the companies to withdraw.) According to the PMA's Notice of Motion, Section 10 of the Amendment Act, introducing Section 15C of the Medicines Act, is unconstitutional on one or more of the following grounds:

1) It allows the Minister of Health to prescribe the conditions for the supply of more affordable medicines. It does not set out any guidelines which would limit the power of the Minister in this regard.

1) It allows the Minister to decide on the extent to which rights under a patent shall apply, irrespective of the provisions in the Patents Act.

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1) It allows the minister to deprive patent owners of their property without any provisions for compensation.

1) It only discriminates against patent owners in the pharmaceutical field. This is in conflict with TRIPS, which has been given effect in South Africa by the passing of the Intellectual Property Laws Amendment Act of 1997.

(Pharmaceutical company lawsuit (forty-two applicants) against the Government of South Africa (ten respondents) 1998).

Public lobbying pressure was put on the South African Government by both the PMA at home, and by PhRMA (Pharmaceutical Research and Manufacturers of America) and the United States Government abroad to alter Section 15C. Although, as we have seen, parallel importation can be TRIPS-compliant, the US, PhRMA and the PMA argued for 'TRIPS-plus' patent protection. Highlights of this pressure include the placing of South Africa on the United States Trade Representative's Special 301 Watch List (mainly because of the Medicines Act) in May 1998 (Department of Health, 2001a). An example of the level of feeling against Section 15C is evident in a US Department of State Report (*US Government efforts to negotiate the repeal, termination or withdrawal of Article 15(c) of the South African Medicines and Related Substances Act of 1965,* 1999). According to the report:

> "All relevant agencies of the U.S. Government, the Department of State together with the Department of Commerce, its U.S. Patent and Trademark Office (USPTO), the Office of the United States Trade Representative (USTR), the National Security Council (NSC) and the Office of the Vice President (OVP) – have been engaged in an assiduous, concerted campaign to persuade the Government of South Africa (SAG) to withdraw or modify the provisions of Article 15 (c) that we believe are inconsistent with South Africa's obligations and commitments under the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS)
>
> ...
>
> Since the passage of the offending amendments in December 1997, U.S. Government agencies have been engaged in a full court press with South African officials from the Departments of Trade and Industry, Foreign Affairs, and Health, to convince the South African Government to withdraw or amend the offending provisions of the law, or at

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the very least, to ensure that the law is implemented in a manner fully consistent with South Africa's TRIPS obligations"

The PMA insisted that 15C could be used for compulsory licensing (the "broad" interpretation of the act), while the Government initially insisted that its intention was only to facilitate parallel importation (the "narrow" interpretation). However, in 1998, having been advised that the law could be used more broadly than initially envisaged, the Government appears to have considered using the law for compulsory licensing. Although compulsory licensing is possible under the Patents Act, it is a slow and costly process. Broad interpretation of 15C would allow the government to bypass the Patents Act and issue "fast track" compulsory licenses on pharmaceutical patents (Love 2001b). This measure has the benefit of keeping pharmaceutical patents separate from other patents. This was deemed necessary because the Department of Trade and Industry (DTI) did not wish to threaten general intellectual property rights under the Patents Act.

By mid-1999, the initial issue, centering around issues of access to drugs in general, had become publicly focused on HIV/AIDS therapies, though the South African Government resisted this focus. Intellectual property rights activists tended to demonize the large pharmaceutical companies as a core part of their political strategy, and linkage of this campaign to the southern African HIV/AIDS epidemic clearly enhanced popular interest in the case. This was particularly true outside of South Africa itself. While we have no direct evidence to substantiate a charge of disingenuousness concerning the activist spokespeople, the interpretation of 15c as being primarily linked to mass antiretroviral access, which the activists successfully established in the public mind and the media, did not reflect legal facts. 15C as drafted is aimed at access to essential medicines, as defined by the WHO in the *Model List of Essential Drugs*. In 1997, AZT was added to the WHO's tenth MEDL solely for the prevention of mother to child transmission. In 1999, Nevirapine was included in the MEDL, again exclusively for the prevention of mother to child transmission (Unicef et al, 2001). Thus antiretrovirals, as used in adult therapy, are not covered by 15c. Nevertheless, once activists emphasized the idea of a link between 15c and HIV/AIDS therapy access, the media discussed little else in connection with the case (see evidence below). This was true both inside South Africa and abroad. Following mass demonstrations by American AIDS activists, particularly against the Gore presidential campaign, the

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United States Government dropped the trade pressures it had brought against South Africa as a result of the Medicines Act. A "Joint understanding between the governments of South Africa and the United States of America" was issued by the South African Department of Trade and Industry (1999). In this agreement, the US Government agreed to remove pressure from South Africa. South Africa agreed in return that:

> "It is the express position of the South African Government that, in the implementation of provisions of the Medicines Act – which permits parallel importation and compulsory licensing of patents for pharmaceuticals – it will honour its obligations under the TRIPS Agreement"
>
> (Department of Trade and Industry, 1999: p.1).

Note that this statement clearly signalled the Government's intention to use the Medicines Act for both parallel importation and compulsory licensing.

From September 1999, the companies in the litigation announced that they would suspend their lawsuit in order to enter into negotiations for a settlement. There was no publicly revealed movement for about a year subsequent to this, and popular media opinion in South Africa assumed almost unanimously that if the Government were to win the court case, it would authorise the domestic production of generics or would import cheap generic HIV/AIDS drugs (Love 2001b). Eventually, declaring that Government was not negotiating seriously, the PMA took up the suit again ("World Trade Rules and Cheaper Drugs", 2001).

By the time the case came to court in March 2001, the Government had changed its stance. We speculate that two developments had contributed to this change. First, South Africa's greatly enhanced public role in WTO politics during and after the lead-up to the failed Seattle negotiations of late 1999 enhanced the attention paid in Government public relations to its commitment to holding developed-world countries accountable to moralized standards on trade liberalization and market access; and this message regularly incorporated the claim that South Africa was an exemplary observer of Uruguay treaty commitments, including TRIPS obligations. Secondly, once the activist campaign had closely associated 15C with increased access to antiretrovirals in the popular media, it was no longer in the Government's interests to implement a "broad" interpretation of the Act, since the Government's opposition to enhanced access to antiretrovirals was then a dominant theme in its health policy. By the time the case reached court on 5

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March 2001, the Government's filed Heads of Argument had come to indicate their intention to argue that the law could only be used for parallel importation, whereas the PMA (who presented their case on the first day of proceedings) was arguing that it could also be used for compulsory licensing.

Resolution of the Court Case

South Africa's Treatment Action Campaign (TAC), the country's leading advocacy group for enhanced levels of access to antiretrovirals, was admitted by the Court as amicus curiae (friend of the court) on 6 March 2001. This caused the proceedings to be delayed until 18 April 2001. When the case reopened, the PMA immediately offered to settle out of court. A "Joint Statement of Understanding between the Republic of South Africa and the Applicants" was released and is available on the *ANC Today* website ("Historic agreement lays the basis for co-operation towards health for all", 2001). In this statement, the Government agreed to seek measures to protect public health (including the enactment of 15c) within the ambit of its TRIPS obligations, while the PMA agreed to work with the Government towards this end. This settlement was widely hailed as a victory by the Government, by AIDS activists and by almost all of the South African media.

The draft regulations of the revised Medicines Act were released by the Department of Health on 1 June 2001. They do not enable any measures for compulsory licensing, but only for parallel importation. This is there defined as:

> "the importation into the Republic of a medicine under patent in the Republic that has been put onto the market outside the Republic by or with the consent of the patent holder in respect of such medicine." (Department of Health, 2001b).

In terms of the original grounds of dispute between the PMA and the Government as discussed above, it is in no way obvious how this constitutes any sort of 'victory' for the latter. The PMA stands to lose very little market power through parallel importation, and only minimal weakening of intellectual property protection is implied. No additional TRIPS-compliant mechanisms to override patent abuses have been implemented as of this writing (May 2002). If all the Government had sought to begin with was a basis for allowing parallel importation, this would have implied no legal contest. Why, then, did the Government instead promulgate the ambiguous and contentious 15C to supposedly get around the exhaustion of rights problem, generating two years of

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trade pressure from the United States, and almost four years of legal action on the part of the PMA? Why did it then concede this entire issue before presenting legal arguments, but nevertheless claim – without dispute from the PMA – political victory? It is of course possible that the entire sequence of events was simply a product of confused and/or shifting aims on the part of the Government. In some sense our analysis below will endorse this diagnosis. However, saying this by itself offers little in the way of genuine explanation. Our aim in what follows is to provide a profile of the Government's utility function under dynamic strategic pressure that explains its course of actions while minimizing the need to ascribe simple irrationality to it.

General Parameters on the S. African Government's Utility Function

In constructing a utility function for the South African Government that would rationalize its role in the events described above, we make several assumptions, all readily justified by numerous policy statements and legislative initiatives. First, the Government views economic growth as the chief precondition for reducing domestic poverty and inequality. Its official macroeconomic policy since 1996, the Growth, Employment and Redistribution (GEAR) plan (Department of Finance 1996), explicitly addresses itself to the task of shifting the economy onto a higher long-run growth path, fuelled primarily by enhanced levels of private capital investment. Along with increased investment, GEAR identifies two other goals as pivotal to this ambition: increased export volumes and values, and fiscal restraint on the part of government. Measures towards the third goal, the one under most direct policy control, have been actively pursued. In order to stabilise the economy, the government has reduced direct spending. During fiscal year 1993/94, the fiscal deficit was 7.9 percent of GDP. By the year 2000, it was 2.3 percent. Although attempts have been made to restructure spending so as to capture new efficiencies, fiscal restraint has limited the delivery of social services and the building of infrastructure (Ayogu & Hodge, 2001). It is reasonable, in light of this, to suppose that the Government would prefer – relative to some unknown maximum level of commitment to humanitarian concerns – to minimize its fiscal exposure to the potentially enormous costs of direct state responsibility for provision of palliative treatment to victims of the expanding HIV/ AIDS epidemic.

The second pillar of GEAR, the commitment to increase export volumes, leads the Government to ascribe high importance to the credibility of its stance in ongoing multilateral trade negotiations.

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Throughout the run-up to the Seattle (1999) and Doha (2001) meetings of the WTO, South Africa has consistently maintained that whereas it has scrupulously observed its existing WTO commitments, OECD nations have lagged in respecting the moral spirit of multilateralism. South Africa's political trade strategy clearly emphasizes the idea that developed countries have moral obligations to reduce barriers to the import of agricultural products, textiles and other goods in which African states have some comparative advantage, and to increase levels of technical assistance. Closely associated with this pursuit of moral leverage is South Africa's repeated portrayal of itself as a 'model WTO citizen.' Furthermore, the Government recognizes that encouragement of enhanced foreign investment and terms of trade would be inconsistent with a reputation, were it to garner one, as an administration disrespectful of property rights, including intellectual property rights. We therefore assume that, whatever level of obligation it in fact recognizes to provide measures for relief of HIV/AIDS and other medical problems, the Government wishes to avoid, at the very least, *gratuitous* appearances of insincere commitment to the letter and spirit of TRIPS.

We assert that, independently of any particular moral or legal view of the South African Government's responsibilities to HIV/AIDS victims, the epidemic level of the infection presents it with a potential crisis given the policy aims just discussed. First, the vast expenses that could be entailed by recognition of very high levels of obligation could challenge the goal of fiscal restraint, and divert critical funds from initiatives the Government regards as essential to its long-term campaign against poverty and inequality. Second, such levels of obligation, if assumed, could commit the Government to agreeing with some strident anti-TRIPS activists that morality demands the flouting of some intellectual property rights; and this would significantly complicate the Government's consistently developed approach to international trade politics, while threatening the attractiveness of South Africa as a destination for foreign direct investment. Any charitable interpretation of the Government's utility function with respect to the issues involved in medical patents policy would, under these circumstances, expect it to be highly nuanced, at the very least.

The Government's Policy on HIV/AIDS Treatment

According to Dorrington *et al* (2001), the population prevalence of HIV as of 2000 is estimated at about 12%, projected to stabilise at

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around 15% by 2005/6. Infection will be the highest in the 30-44 age group, peaking at around 35%. Furthermore, it is predicted that by 2010, the cumulative numbers of AIDS deaths will reach over 6 million and the number of people sick with AIDS will be over 1 million. In 2000, the model estimates that approximately 500 000 are AIDS sick, over 5.4 million are HIV-positive and there have been approximately 517 000 cumulative AIDS deaths to date. This is the largest total concentration of infection within any country in the world.

People are regarded as 'AIDS-sick' once their CD4 cell count falls below 500. Antiretroviral treatment increases the number of CD4 cells and decreases the HIV viral load in the body, thereby decreasing the incidence of opportunistic infections (Achmat, 2001). The TAC suggests that antiretroviral therapy should be initiated once the CD4 cell count drops to 350. Effective antiretroviral combination therapy involves the simultaneous use of three or more different antiretroviral drugs. The various combinations, or 'cocktails,' offer different benefits and produce different side-effects. Unfortunately, because the treatment approach is new, it is difficult to predict long-term negative consequences in terms of both side-effects and the development of drug-resistant strains of HIV.

Prior to April 2002, when a series of legal victories by the TAC against the Government contributed to a major shift in declared policy on mother to child transmission prevention (MTCTP) (though not, to date, in implementation of new provision measures), the Government restricted anti-retroviral treatment in the public health system to a small number of pilot research projects for MTCTP. This policy was intensely controversial, both within South Africa and internationally. With respect to generalised antiretroviral therapy, the Government offers a number of arguments as to why this is impossible. These included appeals to the cost of the drugs themselves, the cost of building health care infrastructure, the cost of administering the drugs (including the cost of running viral load and CD4 cell count tests), and concerns about toxicity and problems with patient adherence to the drug regime. (It is believed that poor adherence is a key factor contributing to the development of drug resistance [*HIV 2000: Major and Emerging Markets*, 2000]).

Some tentative indication of the magnitude of the cost considerations is in order. For a standard first-line therapy combination of AZT/3TC/Nevirapine the drugs cost approximately US$ 1168 per patient per year (if standard dosages are used) for the patented drugs. This is the Free on Board (FOB) price, and does not include the retailer's mark-up. In addition, this price is only available in the public

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sector – it is not freely offered to the private sector (Perez-Casas et al, 2001). Assume that the government were to provide antiretroviral therapy for the estimated 500 000 AIDS-sick patients. As it is impossible to predict the potential price of antiretroviral therapy in the public sector until the Government issues tenders for the purchase of the drugs, assume that the price of drugs is the FOB price of US$ 1168 per patient per annum. This leads to a total cost of US$ 584 million per annum, for drugs alone. Translated into Rands at an exchange rate of R9/$1, this is a total of R5.3 billion per annum. Obviously, this is just the cost of the drugs, and excludes clinical and administrative staff time, laboratory monitoring, capital costs, and recurrent costs. In addition, the cost will increase each year as the number of AIDS-sick increases, given that the treatment is for life.[2]

Faced with this deep tension between its goals of fiscal restraint, determination to show commitment to TRIPS, and a public health crisis, the Government – especially the President and the Minister of Health – responded throughout the period of our present analysis by continuously trying to contextualize AIDS as fundamentally caused by poverty. To the extent that this emphasis is accepted, it might be thought to bring order to the relevant utility function: measures promoting economic growth, including fiscal restraint and encouragement of investment, might thereby be seen as ways of combating AIDS as opposed to failing to do so. To some extent, the contention that poverty contributes to the nexus of health problems associated with AIDS, the President's emphasis is reasonable. Chances of HIV transmission increase when people are malnourished or weakened through other forms of ill-health, especially other sexually transmitted diseases. In addition, people infected with HIV develop AIDS more quickly if they lack adequate nutrition, vitamin supplements and everyday medical support. Unfortunately, the emphasis on poverty as a cause of AIDS generated considerable confusion and public controversy through being sometimes taken to imply that HIV is *not* the fundamental cause of AIDS on the biological level. This confusion greatly increased the tension and moral urgency of the policy disagreement between the Government and activist groups such as the TAC over anti-HIV/AIDS approaches. By the middle of

[2] It would be necessary to do a full economic evaluation of the costs and outcomes of providing antiretroviral therapy and treating opportunistic infections versus the cost of treating opportunistic infections alone in order to calculate the true cost per patient per annum. In particular, the costs of treating opportunistic infections will decrease if patients are on antiretroviral therapy.

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2001, most of the South African and international popular media had adopted the view that the Government was resisting expansion of anti-retroviral access mainly in order to protect its authority over civil society, in an atmosphere that had become deeply polarized between attitudes that implied a over-riding duty on Government's part to protect patients' lives at all costs, and a Government that could not incorporate any such strong obligation into its wider set of policy aims. The Government's general stance in the conflict came to be very widely labelled as a 'public relations disaster', and front-line HIV/AIDS treatment workers complained that statements by the President and the Health Minister were undermining efforts to educate people about the risk and prevention of HIV infection.

In our analysis of the Government's utility function, we try to make only the most cautious assumptions about the Government's plausible motivations for its policies during this period. That is, we assume that the Government wished somehow to strike a balance amongst all of its goals identified above *and* some level of action in defence of public health; but that it could not accept the ascription of maximum moral obligation to life-preservation as compatible with any fiscally viable trade-off. Furthermore, we will assume that the Government recognized its growing public relations difficulties to some extent, and wished to relieve them to whatever extent was compatible with its approximate preferred trade-off point.

The amendments to the Medicines Act on the interpretation that survived the legal settlement have not, in practical terms, directly increased levels of access to publicly funded anti-retroviral treatment. However, the progress and ultimate resolution of the case clearly had some outcomes consistent with the Government's goals as hypothesized above. It contributed to substantial reduction in the prices of some antiretrovirals. This was caused by worldwide activist pressure and critical media attention brought to bear on the PMA as a result of publicity around the court case. Furthermore, the southern African AIDS crisis itself received increasing international media coverage. This likely increased moralized political pressures on OECD countries to give new 'breaks' to developing world countries with respect to multilateral trade regulations, including TRIPS provisions and their interpretation in practice. This is potentially useful for South Africa's strategy of achieving trade reform through exploitation of moral leverage. However, this consideration also introduced complications with respect to the Government's tactics in the court case. The general moral

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leverage strategy requires the Government to maintain support from international and domestic humanitarian lobbies. Furthermore, Cosatu, South Africa's largest trade union and a formal constituent part of the governing coalition, publicly allied itself with the TAC. These considerations sharply limited the extent to which the Government could simply ignore activist pressure and declare its utility function transparently. In this context, the opportunity to present the legal settlement as a Government victory *against* the PMA, a presentation with which the PMA refrained from demurring, represented partial extraction from a difficult political bind.

Before we later specify this intuitive interpretation by technical analysis, we will briefly review some empirical evidence in its favor. Our empirical review included surveys of the following materials: speeches made by President Thabo Mbeki on all topics from 1997 to the present; government documents on HIV/AIDS, foreign policy, and trade; government legislation relating to health and property rights; information on HIV/AIDS contained on the ANC website *ANC Today* (www.anc.org.za), any other relevant information contained at the government web site (www.gov.za); websites of activists and NGOs with particular interest in HIV/AIDS and intellectual property rights (www.tac.org.za; www.cptech.org); local newspapers (*Mail & Guardian* and *Business Day* and their online equivalents, and www.woza.co.za which has subsequently closed); international publications (*New York Times* and *The Economist)*; electronic journals; and various other sources including personal conversations with informed people. It is obviously not possible in this paper to closely scrutinize the resulting mass of evidence. What follows is therefore intended as a representative summary, designed to provide potential critics of our interpretation with a basis for discussion and argument.

1. *The contextualization of HIV/AIDS in Government speeches and documents.*

During the period of our analysis, the Government was highly consistent – and therefore, we presume, careful and deliberate – with respect to the context in which it placed HIV/AIDS. It was called a disease of developing countries or of the poor, and linked with clear instances of such diseases, including malaria and tuberculosis. None of the proffered plans to cope with AIDS promoted the usage of antiretrovirals except in the mother-to-child transmission programme or as a short course for rape survivors (although, as will be shown, the

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Government was highly obstructive in the implementation of these programmes).

Central to the government's campaign has been the repeated insistence that poverty plays an overwhelming role in the transmission of HIV/AIDS. At the *ANC Today* website the following is written:

> Central to the ANC's campaign against HIV/Aids is the message that preventing the spread of the HIV virus is the best defence against Aids. This message reinforces the organisation's commitment to addressing the role of poverty in the spread of Aids;
>
> While HIV/Aids can affect anybody, it hits the poor hardest. The programme to combat the epidemic must therefore be part of the fight against poverty: to make basic health services, clean water and sanitation accessible to all South Africans; to improve nutrition and food security; to fight against diseases such as tuberculosis, STDs and malnutrition; and to promote the empowerment of women and young people.
>
> ("ANC Message on HIV/AIDS: Prevention is our best defence", 2001)

On the topic of anti-retroviral treatment, the documents regularly refer to issues of affordability and to lack of infrastructure, and argue that public health interests can be better served through developing public health infrastructure to combat all the diseases of poverty. This attitude is reflected in President Mbeki's Opening Address at the 13th International AIDS Conference, given on 9 July 2000. Much of this address quotes directly from the *1995 World Health Report,* which names poverty as the greatest cause of ill health in the world.

2. *Government reluctance to accept aid for anti-retroviral treatment assistance from other governments.*

There has been a general trend by the South African Government to refuse offers of aid or loans that could be used specifically to provide AIDS medication in the public health system. For instance, an offer by the United States Government to provide an annual $1billion in loans to finance purchases of anti-AIDS drugs in Africa was turned down by the South African Government (Swarns, 2000a). Acceptance of such loans, it was argued, would jeopardise the strategy of fiscal restraint.

3. *Ambiguous responses to proffered donations from pharmaceutical companies.*

The South African Government has accepted some offers to donate

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medicines used in the treatment of AIDS, but it has simultaneously obstructed delivery of these offers while refusing others. Three examples are given. (i) Pfizer offered to provide free diflucan (a drug used in the treatment of opportunistic infections) in the public health sector. Although the government accepted the offer, it did so a full year from the date at which it was initially made (Swarns, 2000b). It took the Medicines Control Council seven months to approve the tablet form even though the drug had already been approved in a different form (HIV/AIDS Barometer 2001). (ii) Boehringer Ingelheim offered to provide free Nevirapine for five years, for use in the prevention of mother-to-child transmission of HIV/AIDS (Swarns, 2000b). The cost-effectiveness of programmes using Nevirapine to prevent mother-to-child transmission is well documented (relative to the literature on generalised anti-retroviral therapies). Nevertheless, barriers were raised by the Government through the Medicines Control Council (Sidley, 2000). By March 30 2001 the MCC had yet to register the drug (Sidley, 2001c) because of issues about the development of resistance to it. According to Beresford (2001b), "the government has still not announced when it will fully implement a pilot programme to give Nevirapine to HIV-positive pregnant women that had been due to start in March," despite nationwide announcements at the end of January that treatment would begin "immediately" (Smith, 2001). Pilot programmes were eventually set up in all of the provinces, but the TAC's contention that this was inadequate provoked its series of successful court challenges on the matter that contributed to change of policy by the Government on this issue in April 2002. (iii) Some NGOs that provide anti-retrovirals have encountered Government resistance to their activities. The Greater Nelspruit Rape Intervention Project was evicted from state hospitals in Mpumalanga, where they had been counseling rape victims and supplying post-exposure packs of anti-retrovirals to reduce chances HIV contraction. Part of the reason for the eviction, according to the MEC, was that the GNRIP's activities created pressure on all hospitals in Mpumalanga to deliver anti-retrovirals. At the time, the Minister of Health defended the decision of the Mpumalanga government on the grounds that there was no conclusive proof that anti-retrovirals would lower the chances of contracting HIV/AIDS from rapists. Ironically, some Government hospital workers were then treated with anti-retrovirals after needle stick injuries to lower the chances of HIV transmission (Beresford, 2001b).

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4. Evidence concerning the court case as a public relations exercise.

The interpretation of 15c according to which it would allow for both parallel importation and compulsory licensing of drugs, thereby increasing access to anti-retroviral therapy, was common in the local and foreign press, and in statements by Government during the court case. In South Africa's national daily *Business Day,* Barber (2001a) wrote "If 15C is upheld, government will have freed itself from its obligations under existing law not to import Indian or Brazilian knockoffs of drugs whose patents it hitherto recognised and protected." Peter Goosen, who spoke at the World Health Assembly on behalf of the South African government on January 26 1999, said that the legislation allowed for the issuing of non-exclusive compulsory licenses (government production) and for parallel importation (*South Africa Comments to WHA Executive Board on Revised Drug Strategy,* 1999). Patricia Lambert, legal advisor to the Minister of Health in the lawsuit, told *The Economist* that if the government deemed a drug to be too costly, the legislation would allow it to license a local generic manufacturer to make it more cheaply or to buy a generic version from another country under the discretion of the health minister ("A war over drugs and patents" 2001). Dr Glaudine Mtshali, representative of the South African Department of Health in the US, Canada and Brazil, said that if the court ruled in the Government's favor, the legislation would be used to produce generic AIDS drugs locally (Barber, 2001b). Through its encouragement of statements such as these, the Government encouraged the PMA's belief in the need for its lawsuit in the first place, and suggested that what was at stake in the case was its right to champion provision through compulsory licensing. However, the new draft regulations do *not* in fact allow for compulsory licensing. In addition, the Government has not, thus far, exploited the cheaper prices offered for antiretrovirals to increase access in the public health sector.

Nevertheless, following the resolution of the court case the Government enjoyed substantial positive publicity. Sidley (2001b) wrote in the *Business Day:*

> Government basked in the glow of positive publicity this week as it faced the multinational pharmaceutical companies in court...
>
> For a moment there the past year of acrimony between government and HIV/AIDS organisations was forgotten.
>
> No mention was made of the president's questions about the causes of

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> AIDS. Forgotten, too, was the case of the rape crisis workers in Mpumalanga against whom the provincial government had acted for supplying AZT to rape victims. No mention was made of babies born with HIV that might have been spared infection if at least one donation had been acted on earlier.
>
> If the week's events looked like a game of poker, bluffing included, the stakes were particularly high.

The settlement reached in the court case was called a: "total capitulation of the drug companies in their legal action against the medicines legislation" (Sidley, 2001d). The ANC (2001) called the court case "an historic agreement" that "lays the basis for cooperation towards health for all," while not mentioning HIV/AIDS specifically. Instead, the document talks about "the diseases of poverty" and "the diseases that cause poverty" ("Historic agreement lays the basis for co-operation towards health for all", 2001). Belinda Beresford (2001a) of the *Mail & Guardian,* who has won international awards for her reporting on HIV/AIDS, wrote: "At the 13th hour the pharmaceutical industry backed down. The law it fought for three years to prevent being enacted will go ahead, unchanged ... The law that the PMA has now accepted is the same as the one signed by then president Nelson Mandela three years ago... The government had drawn a line: it would not rewrite the disputed areas of the legislation".

It is not any part of our purpose here to argue polemically that the above 'spin' put on the court case by the South African media and the ANC was or was not normatively appropriate or factually confused. We have reproduced the above selection of remarks merely to lend empirical support to our ascribed – and, of course, streamlined and simplified – utility function to the Government. In order to construct our game-theoretic model of the court case, we now must do some analogous work with respect to the other party to it, the PMA.

PMA objectives and strategy

The desire to protect patents explains the involvement of the PMA in the court case. Their fear was that the Medicines Act, especially Section 15C, would lead to a weakening of patents in South Africa for all drugs. In addition, it was feared that the actions of South Africa would set an example for other developing countries.

As of 1998, when our analysis begins, attempted blocking of the Medicines Act was consistent with the standard patent-protection strategy of the pharmaceutical industry. Political and legal assistance in

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such efforts was often provided by the US Government. The United States Trade Representative (USTR) did not distinguish amongst rights in different sorts of intellectual property markets, e.g., software versus drugs. USTR's generic policy was encouragement of TRIPS-plus protection measures in all jurisdictions, for all intellectual property. As we will now show, however, the situation in which simple maximization of patent-exclusivity on all drugs in all countries was seen as equivalent to profit-maximization by the PMA and its Government allies evolved over the period under analysis. We will focus on the approximately shared utility function of the so-called 'Big Five' pharmaceutical companies: Merck, Roche, Boehringer Ingelheim, GlaxoSmithKline and Bristol-Myers Squib. The main players in the antiretroviral market, They are part of the UNAIDS Accelerating Access Initiative, and collectively determined the PMA's final terms of settlement in the case.

The pharmaceuticals industry is imperfectly competitive. While the industry as a whole is characterised by a large number of firms, the various market segments for individual therapeutic classes are typically fairly concentrated. The first drug to use a specific mechanism to treat an illness is called a 'breakthrough drug,' which, by definition, has no close substitutes on the market. Demand for these drugs is therefore fairly inelastic while their period of exclusivity lasts. However, patents do not prevent companies from developing different chemical entities that use the same basic mechanism to treat an illness. These are called 'me-too' drugs. A Congressional Budget Office (1998) study estimates that a breakthrough drug typically has between 1 and 6 years of pure market exclusivity before a 'me-too' drug enters the market. These do not offer novel treatments, but may have fewer, or different side effects and may treat some patients more effectively (CBO, 1998). Demand for a breakthrough drug is expected to become more elastic when a 'me-too' substitute enters the market, though overall demand levels may also be stimulated. However, barriers to entry into individual markets often limit this competition. There are usually only a certain number of chemical entities that can effectively exploit the same treatment mechanism. In addition, larger firms have an advantage in marketing and in the Food and Drug Administration approval process. This is because a key element of competitive strategy is advertising, in which there are major economies of scale available through promotion across large product lines. In addition, studies have shown that new drugs from bigger companies are three times more likely than those from less experienced companies to be approved by the FDA (CBO, 1998).

Antiretroviral drugs are divided into three classes: nucleoside re-

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verse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors and protease inhibitors (Unicef et al, 2001). Table 1 provides a list of the various antiretroviral drugs available on the market today, divided by class and manufacturer. There are three different manufacturers of NNRTI's, three different manufacturers of NRTI's and three different manufacturers of PI's.

Competition amongst brand name antiretrovirals cannot be modeled as a series of simple price / quality tradeoffs, because complex treatment regimens are frequently combinations of two or three different drugs, from different therapeutic classes and different manufacturers. For example, the Médecins Sans Frontières project in Khayelitsha has recently started an adult triple therapy programme. This is the only public sector project of its kind in South Africa. Their first line treatment is a combination of AZT, 3TC and Nevirapine. This is a combination of two NRTI's made by GlaxoSmithKline and one NNRTI from Boehringer Ingelheim. Their second line treatment is a combination of ddI, d4T and Nelfinavir. This is two NRTI's manufactured by Bristol Myers Squibb and one protease inhibitor made by Roche. While ddI and d4T are relatively inexpensive due to Bristol Myers' recent price cuts, Nelfinavir is expensive. This makes this treatment regimen the pricier of the two.

Part of the decision to pursue the first line regimen over the second must come down to considerations of cost. Médecins Sans Frontières may also prefer the first line treatment because the GlaxoSmithKline drugs are combined in one tablet, and are therefore easier to take. However, the regimens may be altered because of side effects relating to one of the drugs, or because of relatively low efficacy. Such cross-firm product bundling encourages the large firms to act as a cartel in their dealings with governments and public providers, and helps to stabilize the cartel against incentives to defect.

Providing the incentive to invest in R&D is the primary justification of the patent system. While certain drugs may indeed be expensive to develop, others are not. Drug companies generally do not provide publicly accessible, meaningful breakdowns of their R&D costs on specific products or product-classes. Most estimates of the costs of drug development are extrapolated from a 1991 study by DiMasi et al, using their methodology and data. They estimate the pre-tax mean expected capitalised costs of drug development to be $231 million in 1987 dollars. To calculate this figure, they obtained micro-level data on the cost and timing of development for 93 randomly selected New Chemical

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Table 1:

Antiretrovirals Sorted by Therapeutic Class

Nucleoside Analogue Reverse Transcriptase Inhibitors

Compound	Zidovudine (AZT)	Didanosine (ddI)	Zalcitabine (ddC)	Stavudine (d4T)	Lamivudine (3TC)	Abacavir
Brand Name	Retrovir	Videx	Hivid	Zerit	Epivir	Ziagen
Marketing Company	Glaxo	BMS	Roche	BMS	Glaxo	Glaxo

Protease Inhibitors

Compound	Saquinavir	Ritonavir	Indinavir	Nelfinavir	Amprenavir	Lopinavir + Ritonavir
Brand Name	Invirase; Fortovase	Norvir	Crixivan	Viracept	Agenerase	Kaletra
Marketing Company	Roche	Abbott	Merck	Roche	Glaxo	Abbott

Non-Nucleoside Reverse Transcriptase Inhibitors

Compound	Nevirapine	Delavirdine	Efavirenz
Brand Name	Viramune	Recriptor	Sustiva
Marketing Company	Boehringer Ingelheim	Pharmacia and Upjohn	Dupont / Merck

Source: Unicef et al, 2001

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Entities[3] first investigated in humans from 1970 to 1982 in the United States, with reported development expenditures running until 1987. Using this data, DiMasi et al calculate the average expected out-of-pocket-costs of clinical testing for all New Chemical Entities to be $11.1 million. However, because not all New Chemical Entities will be marketed, the researchers factor in a 77% risk of failure, or an expected success rate of 23%, on each potential product. This implies that the aggregate cost of New Chemical Entities that make it to market is $48.1 million.[4] To this is added the cost of long-term animal testing and an estimate of the cost of pre-clinical phases (for which there is no micro-level data). This yields estimated uncapitalized expected costs of each phase for a New Chemical Entity that makes it to market.

We will summarize the calculation method used by DiMasi et al. This is necessary because we will subsequently show that when probable R&D costs for existing antiretrovirals are critically re-examined relative to this method and its underlying assumptions, the figures standardly cited in public by the PMA become far less plausible. Court proceedings, had they been allowed to unfold, would certainly have exposed this fact in detail, and this was surely relevant to the PMA's incentives for settling.

In order to calculate the opportunity cost of capital, DiMasi et al estimate a representative time profile. They find that it takes approximately 12 years and 5 months to bring a new drug to market. Phase costs are assumed to be distributed uniformly over actual mean (pre-clinical and clinical) phase lengths and capitalized at a discount rate r. This is a real rate of return of 9%. Capitalized mean phase costs c_j are calculated:

$$c_j = \int_{z_j - t_j}^{z_j} (x_j / t_j)\, e^{rt}\, dt \quad \text{for } j = 1, 2, 3$$

where index values 1, 2 and 3 refer to phases I, II and III respectively, x_j is the uncapitalized cost of the particular phase, t_j is the phase-length and z_j is the time from the beginning of the phase until the drug is approved and brought to market. Capitalized preclinical cost per NCE P_c can be given by:

$$P_c = \int_{T}^{T+t_P} (P_u / t_p)\, e^{rt}\, dt$$

[3] DiMasi et al (1991) define NCEs as New Chemical Entities never before tested in humans. In addition, these are self-originating: they are not licensed from another firm or developed with the aid of government

[4] This is calculated by dividing $11.1million by 0.23 – the clinical approval success rate.

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where P_u is the uncapitalized pre-clinical cost, T is the total time for the clinical phases and tp is the time for the preclinical phase (DiMasi et al, 1991: p 118). Animal testing costs are capitalized in a similar manner.

In 1990, an Office of Technology Assessment study recalculated DiMasi et al's figures using an opportunity cost of capital that decreases linearly from 14 to 10 percent from the beginning to the end of R&D to get a total of $359 million in 1990 dollars. This was assumed to be the upper bound of fully capitalized costs per successful chemical entity.

The DiMasi et al methodology has been subject to some criticism. Their data was obtained from a confidential survey of a group of twelve US-owned pharmaceutical firms (DiMasi et al, 1991), and so the accuracy of their out-of-pocket cost estimates cannot be verified by other researchers. In addition, no project-level data was available for pre-clinical phases of drug development, so their estimate is based on aggregate industry level data. This data is likely to be less accurate than the data for clinical periods. Secondly, their calculations are pre-tax. A dollar invested in R&D is a dollar on which corporate profit taxes are not paid (at a current US average rate of 34%). This means that every dollar spent on R&D represents an actual outlay of $0.66. The CBO (1998) study argues that DiMasi et al's figures should be recalculated to account for these tax concessions.

Most importantly for the present analysis, DiMasi et al's estimate is specific to innovative drugs that are discovered and developed entirely by one company. It is therefore not applicable to most existing antiretrovirals, which were frequently developed with funding from government, or in certain cases, were discovered by federal agencies and licensed to drug companies for marketing. Information on government aid in the development of antiretrovirals is widely available in activist circles, and increasingly in the media. This type of information would have been part of the Treatment Action Campaign's testimony in the South African court case (Love, 2001c). We will summarize its potential implications with respect to the antiretroviral products of each of the Big Five firms. GlaxoSmithKline owns the patents for AZT (the only breakthrough drug that it markets), 3TC, Ziagen and Amprenavir. The Michigan Cancer Foundation initially synthesised AZT on a grant from the National Cancer Institute. BioChem Pharma invented 3TC and licensed it to Glaxo for a 14% royalty. It is also probable that Yale and Emory Universities played a role in development, while the US government sponsored more than 40 clinical trials for 3TC. The University of Minnesota invented Ziagen with support from the

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National Institute of Health. Amprenavir was discovered by Vertex but licensed to Glaxo for development. Amprenavir is a protease inhibitor and the National Institute of Health was pivotal in the discovery of protease inhibitors as an effective treatment for HIV/AIDS. The United States Government was involved in clinical trials on Nevirapine, Boehringer Ingelheim's only breakthrough antiretroviral. Bristol-Myers Squib manufactures ddI and d4T, both of which are 'me-too' drugs; the United States Government invented ddI and licensed the drug to BMS on an exclusive basis. d4T was synthesized by the Michigan Cancer Foundation on a grant from the National Cancer Institute. Yale University holds the key patent for d4T. Roche manufactures ddC and Saquinavir. ddC was initially synthesised under a National Cancer Institute grant at the Michigan Cancer Foundation. It was then exclusively licensed to Roche for the treatment of HIV/AIDS. In addition, the National Cancer Institute conducted the first clinical trials of ddC (a 'me-too' drug). Roche also holds the patent for Saquinavir, the first drug in the class of protease inhibitors. However, the National Institute of Health did much of the initial research in determining the efficacy of protease inhibitors in the treatment of HIV/AIDS. There was also government involvement in clinical trials for Saquinavir. Merck manufactures Indinarvir, and Efavirenz, both 'me-too' drugs. Indinarvir is a protease inhibitor. The US Government was involved in the initial development of protease inhibitors as a treatment in HIV/AIDS. There was also federal involvement in the clinical trials for both drugs (Balasubramaniam, T. 2000; *Additional notes on government role in the development of HIV/AIDS drugs,* 2000).

DiMasi et al's value for the opportunity cost of capital is heavily reliant on their estimated representative time profile. For breakthrough antiretrovirals, the average length of time from filing a patent application to marketing is 3.13 years, as shown in Table 3. Although the data does not indicate at what point of development patent applications were filed, this normally happens before the start of the clinical testing phase. To be safe, one could assume that the drugs took 3.13 years from the start of clinical testing until approval, which is less than half DiMasi et al's estimate. This means that opportunity costs would be much lower. This difference has implications for the effective patent life of the drugs. Drugs in DiMasi et al's study have an average effective life of about 8 years, while antiretrovirals have an average effective patent life of 16.9 years. This increases the period of monopoly power and hence the profitability of a drug. A Tufts Center for the Study of Drug Develop-

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ment report shows antiretrovirals brought to market in 1996, 1997 and 1998 as having had the shortest development time from clinical to approval for all classes of drugs (Kaitin & Healey, 2000).

In light of both the general criticisms of DiMasi et al's model, and of the specific issues concerning antiretrovirals just reviewed, we need to recalculate estimations of their costs and profitability. We re-estimate DiMasi et al's figures for all breakthrough antiretrovirals, and then for AZT separately. For breakthrough antiretrovirals, the calculation retains DiMasi et al's estimate of preclinical development time, but prorates the clinical development times over 3.13 years. It uses the same uncapitalized expected costs as DiMasi et al. The different result is therefore entirely attributable to shorter development times leading to a lower opportunity cost of capital. For AZT, the clinical development times are prorated over 1.5 years and the preclinical costs are assumed to be zero, because Glaxo did not carry out the preclinical development of AZT.

Drug development costs change over time, which means that DiMasi et al's estimates are most accurate for drugs first investigated between 1970 and 1982, with development continuing until 1987. The antiretrovirals currently on the market were developed between 1985 and 2000. But it is likely that the uncapitalized expected costs of antiretrovirals were still lower, because of US Government involvement and funding.

These estimates suggest that adjustment of the length of time for drug development changes the estimates of opportunity cost of capital substantially. Reducing the figure to account for tax savings gives an estimated average after-tax capitalized cost of breakthrough antiretroviral development of $61.06million in 1987 dollars. This would still represent an overestimate for those drugs that were not developed solely by the company that marketed them. This is why the estimated cost of AZT development is only $22.74 million. Glaxo was not involved in the preclinical trials on AZT, and it took Glaxo 1.5 years to bring AZT to market.

A simple calculation can be made to estimate the break-even sales quantity for AZT. Assume a simple cost equation:

$$TC = k + xQ \qquad [1]$$

where TC is total cost, k is the cost of R&D, x is marginal cost (assumed

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Table 2:
Development Times for Antiretrovirals

Nucleoside Analogue Reverse Transcriptase Inhibitors

Compound	Zidovudine (AZT)	Didanosine (ddI)	Zalcitabine (ddC)	Stavudine (d4T)	Lamivudine (3TC)	Abacavir
Brand Name	Retrovir	Videx	Hivid	Zerit	Epivir	Ziagen
Marketing Company	Glaxo	BMS	Roche	BMS	Glaxo	Glaxo
FDA Approval	1987	1991	1992	1994	1995	1998
Filing of Patent	1985	1987	1987	1986	1989	1989
Total	1.5 years	4.2 years	4.9 years	7.5 years	6.8 years	8 years

Protease Inhibitors

Compound	Saquinavir	Ritonavir	Indinavir	Nelfinavir	Amprenavir	Lopinavir + Ritonavir
Brand Name	Invirase; Fortovase	Norvir	Crixivan	Viracept	Agenerase	Kaletra
Marketing Company	Roche	Abbott	Merck	Roche	Glaxo	Abbott
FDA Approval	1995	1996	1996	1998	1999	2000
Filing of Patent	1990	1995	1993	1994	1993	?
Total	5 years	0.9 years	2.9 years	5.7	5.4	

Non-Nucleoside Reverse Transcriptase Inhibitors

Compound	Nevirapine	Delavirdine	Efavirenz
Brand Name	Viramune	Recriptor	Sustiva
Marketing Company	Boehringer Ingelheim	Pharmacia and Upjohn	Dupont / Merck
FDA Approval	1996	1997	1998
Filing of Patent	1993	1994	1995
Total	2.9	3.1	3.3

Average Development Times:

Breakthrough drugs	3.13
"Me-too" drugs	4.79
Overall average:	4.44

Source: Balasubramaniam, 2000; Unicef et al, 2001

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Table 3:

Expected phase costs per marketed NCE (in millions of 1987 dollars) versus costs for antiretrovirals and costs for AZT

Testing Phase	Uncapitalized expected costs	Mean phase length DiMasi NCEs	Mean phase length antiretro-virals	Mean phase length AZT	Capitalized Expected Costs DiMasi	Capitalized Expected Costs Antiretrovi-rals	Capitalized Expected Costs AZT
Preclinical	65.5	42.6	42.6	0	155.6	110.863466	0
Phase I	9.3	15.5	5.48709	2.6296	17.8	13.3654193	12.292537
Phase II	12.9	24.3	8.60234	4.1225	21.4	17.6900115	16.6717695
Phase III	20.2	36	12.7442	6.1074	27.1	30.1294373	30.7962684
Long-term animal	5.3	33.6	11.8946	5.7003	8.2	7.00037544	6.63460541
Other animal	0.4	33.6	11.8946	5.7003	0.7	0.52833022	0.50072494
NDA Approval		30.3	10.7264	5.1404			
total	113.6	148.7	80.16	18	230.8	179.57704	66.8959053

DiMasi et al, 1991 p 125

For DiMasi's figures, all costs were deflated using the GNP Implicit Price Deflator. To the phase lengths (monthly periods) is added the New Drug Approval review period, estimated to be 30.3 months. Animal testing was estimated to start 4.0 months into Phase II.

Costs were capitalized at a 9% real discount rate.

Costs are capitalized from start of phase until market.

All figures in 1987 Dollars.

Table 4:

After-tax Development Costs for Antiretrovirals and AZT

Testing Phase	Uncapitalized Expected costs, after tax	Capitalized Expected Costs Antiretrovirals	Capitalized Expected Costs AZT
Preclinical	48.88059701	37.69357855	0
Phase I	6.940298507	4.544242556	4.179462589
Phase II	9.626865672	6.014603922	5.668401643
Phase III	15.07462687	10.24400867	10.47073125
Long-term animal	3.955223881	2.380127651	2.255765839
Other animal	0.298507463	0.179632276	0.170246478
NDA Approval			
total	84.7761194	61.05619362	22.7446078

Using the current corporate profit tax rate of 34%

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constant) and Q is output (Crotty, 2000). For drug manufacturers to be successful, the present value of their future profits from the sale of new products (discounted to the date the products were introduced) must exceed the capitalized cost of their original R&D investment (capitalized to the date of market introduction), including investment in drugs that never make it to the market. (That is, total revenue must exceed total cost.) Where total revenue equals total cost, the firm will break even. For AZT

$$TR = TC$$
$$P.Q = k + xQ$$
$$Q = k / (P - x) \qquad [2]$$

where Q is units sold, k is the estimated cost of R&D of $22.74 million, x is the marginal cost, and is assumed to be Cipla's latest generic price of $0.84 per daily dosage of 2 x 300mg tablets. Ideally, P would represent the developed market ex-works (or manufacturer's) price of AZT. Unfortunately, it is not easy to get an indication of the ex-works price of AZT in the developed markets. In the interests of caution, and in light of the fact that ex-works prices have likely declined over time, we base our estimate here on the 2001 Spanish consumer price, the lowest in Europe, and calculate a developed-market ex-works price from this (Unicef et al, 2001). We thereby set P at $3.96 per day (2000 dollars).

Solving for equation two reveals that Glaxo would break even after selling 7.288 million daily dosages of AZT, or after treating19,968 people for one year. AZT has been on the market since March 1987 (14.4 years). Thus Glaxo needed its product to be used in treatment of 1,387 people per annum to break even, at a daily price of $3.96. In addition, the US patent only expires in September 2005, which gives them another 4 years to price above marginal cost. *HIV 2000: Major and Emerging Markets* (2000) reports that global efforts by Glaxo resulted in $101million in AZT sales in developing countries *alone* in 1997. Médecins Sans Frontières reported to the South African government in 2000 that global sales on AZT less marginal cost had earned Glaxo $694million between 1997 and 1999 (in Achmat, 2000). In other words, Glaxo has been profiting from sales of AZT for years.

Calculations of this sort make clear that the Big Five faced no risk of losses on their investments if they were to lower the prices of antiretrovirals. Indeed, they show the high profitability of these drugs. This type of evidence was part of the Treatment Action Campaign's case as Amicus Curiae (Love, 2001c).

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Recent years have in fact seen a dramatic fall in the prices of antiretrovirals, as shown in figure 2.

The post-cut prices of BMS, and Merck are in line with, or cheaper than, generic offers. Boehringer Ingelheim's Nevirapine is free for mother-to-child treatment but pricier than the generic for adult treatment. These prices are available in the private sector. Roche has offered price cuts in the public sector through the UNAIDS Accelerating Access Initiative, but its cuts have been the least substantial and its antiretrovirals are currently the most expensive. Glaxo has also been reticent about its offers. No reductions have been offered for Abacavir, and its prices for 3TC and AZT are above the generic price. Its cuts are also available only in the public sector (Unicef et al, 2001).

What has led the industry to cut prices so drastically? According to a report in the *Wall Street Journal:*

> "These days, the world-wide drug industry is reeling from an unprecedented wave of public scorn. Coming from so many corners and with such ferocity, the attacks have put the hugely profitable and politically influential industry on the defensive as never before" (Harris, 2001: p. 2)

This turn in public opinion has been caused by the direct action of activists worldwide, who have drawn media and public attention to the African HIV/AIDS crisis. As noted earlier, the effectiveness of this campaign eventually led the US Government to withdraw its support for TRIPS-plus patent protection for antiretrovirals in South Africa.

By 2000, the position of the Big Five was visibly evolving. In that year, UNAIDS started an Accelerating Access Initiative in partnership with the Big Five, who offered to sell their antiretrovirals in the developing world at price reductions of up to 80%. However, this offer was hedged with numerous caveats, which made implementation difficult. Ultimately, drugs were delivered to less than 2,000 people in Rwanda, Senegal and Uganda. Activists successfully publicized this outcome and encouraged the media to spin it as resulting from corporate hypocrisy. The industry's case further worsened when Cipla offered to deliver drugs at even lower prices, suggesting that the 80% reductions still left the Big Five with mark-ups over marginal costs.[5]

[5] Currently, Cipla still has the lowest prices. It offers a drug for use in triple therapy that is a combination of AZT, 3TC and Nevirapine. The offer is to not-for-profit programmes at $0.96 per day. Glaxo offers a combined AZT-3TC drug (called combivir) to developing countries for $2 per day, and Boehringer Ingelheim offers Nevirapine for $1.22 per day for adult therapy. This makes Cipla***s offer 70 percent cheaper.

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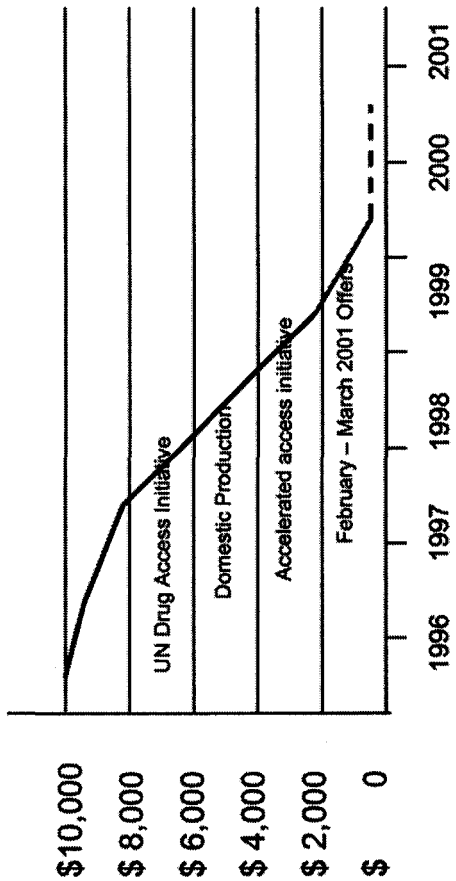
Figure 2: The Decline in Antiretroviral Prices



Source: Presentation by Dr J. Quick in *Report of the Workshop on Differential Pricing and Financing of Essential Drugs* 2001: 8.

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The fall in prices of brand-name antiretrovirals to near-parity with those of their generic equivalents is thus clearly a consequence of political and media pressure, which was effective in part because claimed threats to profitability were not in fact true. According to Merck CEO, Raymond Gilmartin:

> "The actions we've taken with pricing and the settlement of the lawsuit in South Africa were important for taking away the notion that intellectual-property rights are a barrier to access"
>
> ("A Healthy Diagnosis", 2001: p.22)

We suggest that the PMA's willingness to settle was thus based on a calculation that the costs to their public reputations from stubborn maintenance of their 1996 position exceeded the value of continued sales at high prices in the developing world, especially in light of the fact that investments in antiretrovirals had already been recouped. Had the settlement of the court case threatened patent protection more generally the PMA might well have been incentivized to continue fighting. However, as we saw in our review of the terms of settlement in the previous section, this was not the case, public perceptions to the contrary notwithstanding.

Economic Analysis

Having empirically justified our attribution of utility functions to both the South African government and the PMA, we will now explain the development and settlement of their interaction as the outcome of a game. We proceed by representing two games, one hypothetical and one actual. The first shows the situation that confronted the two players given their perceptions of their payoffs from the beginning of 1998 until the end of 1999. Analysis of this game predicts what *would have* happened had the controversies around the Medicines Act not come to be exclusively focused around the antiretroviral access issue. Our second game models the strategic interaction as it appeared once the success of the HIV/AIDS activists in 'spinning' the issue had become evident. This game has a different equilibrium from the first, one corresponding to the actual outcome.

1. First Game

This game starts with the passing of the Amendments to the Medicines Act in 1997, intended to increase access to essential medicines and to decrease the costs of drugs in the public sector.

Suppose that PMA sues the South African Government (SAG) in

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an attempt to block the passing of the Amendments Act. The issue is initially about parallel importation of patented drugs, but increasingly, there is a distinction between broad 15C (TRIPS-compatible parallel imports and compulsory licensing) and narrow 15C (parallel imports only). It is not clear whether the Government means to use 15C in the broad or the narrow sense. The PMA is strongly supported by PhRMA and the United States Government, pushing for TRIPS-plus protection that would prevent even parallel importation.

This situation is modelled following Gintis's Nuisance Suit game (Gintis 2000: 100). In Gintis's formulation of this game, it is essential for the plaintiff to make their threat to sue credible. Clearly this is not a problem in this case, because the suit is not frivolous. This is because the cost of litigation, especially given the support of both PhRMA and the US Government, is less than the value of the patent protection that the PMA might lose if 15C is implemented on the broad interpretation of it. Patent litigation is standard practice for PhRMA, which has appropriate lawyers for the purpose permanently on retainer.

If PMA wins, its payoff x represents the expected value of avoiding compulsory licensing and parallel importation. If PMA loses, its payoff is arbitrarily set at *0*. Similarly, if SAG wins, its payoff x represents the expected value of implementing compulsory licensing and parallel importation. If SAG loses, its payoff is set at *0*.

If SAG offers to settle, and PMA accepts this, assume that PMA gets a settlement payoff of sx where s is some proportion of x such that $0<s<1$. SAG gets $(1-s)x$. s represents the expected value of avoiding compulsory licensing for PMA while $(1-s)$ is the expected value of parallel importation to SAG. A settlement on these terms, therefore, would represent an outcome in which PMA drops its suit and SAG agrees not to use 15C for compulsory licensing.

If PMA were to pursue the suit and set it down for hearing, they have a probability of winning p. The probability of the SAG winning is $(1-p)$. Players evaluate the expected values of lotteries as follows:

$$E[l] = \Sigma\, p_i x_i$$

For PMA, the expected value of the lottery is:

$$E[l]_{PMA} = px + (1-p)\,(0)$$

$$E[l]_{PMA} = px$$

For SAG, the expected value of the lottery is:

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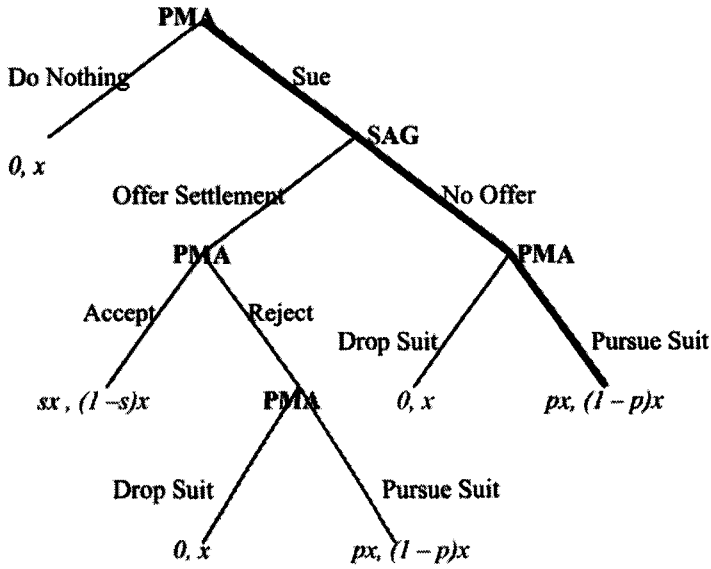
Figure 3:
Law Suit Game



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$$E[l]_{SAG} = (1 - p)x + 0p$$

$$E[l]_{SAG} = (1 - p)x$$

The extensive form of this game is depicted in Figure 3.

Through backward induction on this tree, one sees that the strategy Pursue Suit strictly dominates Drop Suit for PMA, unless the probability of winning is zero, in which case the payoff from Pursue Suit is equal to the payoff from Drop Suit. If SAG were to offer a settlement, PMA would evaluate a payoff of sx against a payoff of px. In other words, accepting SAG's offer would depend on the values of p and s. If $p > s$ they will reject the settlement offer and visa versa.

SAG must evaluate $(1 - s)x$ against $(1 - p)x$ in deciding whether to offer a settlement. It could be argued that the odds of SAG winning the lottery are reasonable. However, the payoff of $(1 - s)x$ is a relatively small proportion of x because if it settles then SAG cannot compulsory license. Therefore, under certain values of p, No Offer would dominate Offer Settlement. SAG's actual observed behaviour during 1998-99 is consistent with an evaluation by it that No Offer dominates Offer Settlement. It staunchly refused to modify 15C even though it was under strenuous pressure from the US Government to do so.

If this game were to have been played out to conclusion, the payoffs to the players would have been:

$$px\,,\ (1 - p)x$$

PMA sues, SAG offers no settlement, and the court decides the outcome of the game. This is a subgame perfect equilibrium.

2. *Second Game*

However, the game as shown depicts the players' initial conceptions of it; before its resolution the game changed. One event that altered it was the abortive attempt at launching a new WTO multilateral bargaining round in Seattle in December 1999. At Seattle, many activists, NGOs and, to a more moderate extent, the US negotiators, promoted incorporation of special environmental and labour standards provisions within the WTO. This was widely perceived in the developing countries as a potential threat to their interests, and encouraged the South African Government to consolidate and re-emphasize its policy of fully and visibly upholding the terms of TRIPS for moral leverage, while arguing that OECD countries were shrinking from the full spirit of reciprocal concessions.

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Secondly, as described in the previous section, HIV/AIDS activists, both inside and outside of South Africa, succeeded in capturing the issue of the court case with respect to the focus of the media. From early 2000, the conflict over 15C came to be popularly interpreted as a story about a poor country valiantly fighting cruel pharmaceutical companies to increase access to antiretroviral drugs in the midst of an epidemic. In light of its utility function as discussed above, this raised a complicated situation for SAG: victory in the court case could have committed them to mass provision of antiretrovirals, which they opposed, as a result of freedom to grant compulsory licenses. Why doesn't SAG simply settle at this point? Its behavior is rationalized, consistently with all available evidence, if we suppose that it saw the opportunity to gain moral capital by being perceived to be "taking on" the pharmaceutical companies.

The game then becomes, from SAG's perspective, an exercise in bluffing. SAG knows whether it actually intends to implement broad or narrow 15C, but the PMA does not. It is in SAG's interest to exploit this private information in such a way as to encourage PMA to believe that the game's structure has not changed.

However, relevant parametric circumstances have also changed for PMA. First, it no longer has the support of the US Government and its trade-related pressure. Second, it continues to suffer from an accelerating public relations disaster while the case goes on, as a result of the activists' media success.

We model the resulting interaction using the standard approach to games involving asymmetric information. The game tree is given in Figure 4.

Nature has the first move, and chooses Broad or Narrow interpretations of 15c, using a probability distribution $\{q_1,\ldots,q_n\}$. The probabilities are common knowledge to both players. SAG's asymmetric information advantage is captured in the fact that its information sets are singletons while PMA's are not; thus when SAG moves it knows what Nature has done and on which of the left or right branches the game is being played out, while PMA lacks this knowledge. (Dotted curved lines link nodes in common information sets.) If Nature plays Broad and PMA wins the court case, it receives a payoff of x. If it loses the case along this side of the tree, it receives a payoff arbitrarily referenced at 0. If Nature plays Narrow and PMA wins the court case, it still receives a payoff of x. However, if it loses the case along this side of the tree, the payoff is sx – the settlement payoff. This is because a narrow interpretation of 15c means that SAG has no intention of

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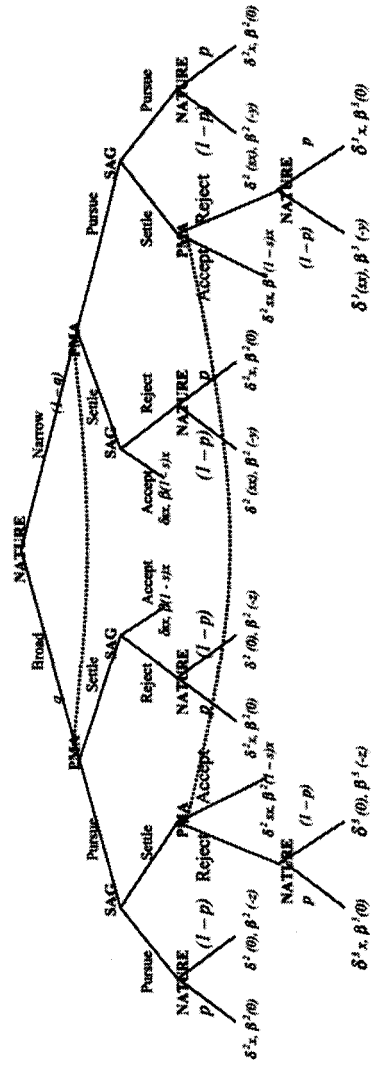

Figure 4:
Bluffing Game

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implementing compulsory licensing. For SAG, the payoff from winning the court case when Nature plays Broad is its worst outcome, since this implies both a perception of weak commitment to TRIPS and intense pressure from activists to begin mass provision of antiretrovirals through compulsory licensing. Call this payoff $-z$. If SAG loses the case along this side of the tree its payoff is arbitrarily referenced at 0 (what it earns if it simply returns to the pre-Medicines Act status quo). If Nature plays Narrow and SAG wins the court case, this earns SAG's second-worst payoff. To win on this side of the tree SAG would have to argue in court that the law could only be interpreted narrowly. Those who have read SAG's classified Heads of Argument report that it was their intention to do this had the case gone to hearing. However, it would have diminished SAG's moral capital payoff had it thus argued publicly through negative activist and media attention. Call this payoff $-y$. If SAG loses, the payoff is again arbitrarily referenced at 0.

Finally, there are moral capital losses to PMA for playing this game, accumulating at each additional round. These are given by a parameter δ: $0 < \delta < 1$. For every round of the game played, PMA's payoff is discounted by δ. The lower the value of δ, the greater will be PMA's incentive to resolve the case as quickly as possible. SAG, on the other hand, gets positive reputation effects for every round of the game, as given by $\beta : \beta > 1$.

In other words, SAG's payoff is increased if the game lasts for more rounds, as it is in its interests to draw the procedure out to maximise its moral capital gain. The incentive represented by this parameter may explain PMA's belief that SAG was not negotiating in good faith during 2000.

The other outcomes result from mutual decisions to settle. We arbitrarily give each player one opportunity to settle before the court passes judgement. This simplification is harmless, since the possibility of adding further rounds with additional settlement decisions could be rendered equivalent simply by suitably adjusting the values of δ and β. In the actual process, settlement negotiations went on out of public view. In the game, players can thus divide the gains in a manner that allows some mutual manipulation of the public opinion that determines moral capital payoffs.

On the margin, PMA gains more utility from maintaining profits by avoiding compulsory licensing and parallel importation. They wish to keep as much of x as possible. Assume that in a settlement, PMA avoids

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compulsory licensing, but allows SAG to implement parallel importation uncontested. Call this payoff to PMA *sx*, which is some proportion of the full expected value of *x*. In settling, the government gets the remainder of *x* – that is, the benefits from parallel importation of essential medicines – as represented by *(1-s)x*. This implies that:

$$0 < s < 1.$$

If there is no accepted settlement offer, the court decides the outcome of the game.

Where Nature plays Broad, PMA earns *x* with a probability of *p* and earns *0* with a probability of *(1-p)*. The expected value of the lottery *E[l]* for the PMA is:

$$E[l]_{PMA} = px + (1 - p)(0)$$

Where Nature plays Broad, SAG earns a payoff of *–z* with a probability of *(1-p)* and earns *0* with a probability of *p*. The expected value of the lottery for SAG is:

$$E[l]_{SAG} = (1 - p)(-z) + p(0)$$

Where Nature plays Narrow, PMA earns *x* with a probability of *p* and earns *sx* with a probability of *(1-p)*. The expected value of the lottery for PMA is:

$$E[l]_{PMA} = px + (1 - p)(sx)$$

Where Nature plays Narrow, SAG earns a payoff of *–y* with a probability of *(1-p)* and earns a payoff of *0* with a probability of *0*. The expected value of the lottery for SAG is:

$$E[l]_{SAG} = (1 - p)(-y) + p(0)$$

If SAG offers to settle, giving PMA the choice between accepting and gaining *sx*, or pursuing the case and entering the lottery, what will their choice be? The expected value of their payoff is *q* multiplied by their payoff where Nature plays Broad, added to *(1 – q)* multiplied by their payoff where Nature plays Narrow. Thus PMA's expected value of rejecting the settlement and entering the lottery is:

$$E[v]_{PMA} = q[\, px\,\delta^{3} + (1 - p)\,\delta^{3}0] + (1 - q)\,[(1 - p)\,\delta^{3}sx + px\,\delta^{3}]$$

$$E[v]_{PMA} = \delta^{3}x\,(\, s - ps + p - qs + qps\,)$$

Their expected value from accepting the settlement is:

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$$E[v]_{PMA} = qsx\,\delta^2 + (1-q)\,sx\,\delta^2$$

$$E[v]_{PMA} = sx\,\delta^2$$

If:

$$sx\,\delta^2 > \delta^3 x\,(s - ps + p - qs + qps)$$

then the PMA will accept SAG's settlement offer.

By solving for s, we can calculate the threshold level of s, the point where PMA is indifferent between Accept and Reject, given various values of p, q and δ (x cancels out). At the threshold level:

$$s = \delta p / (1 - \delta + \delta p + \delta q - \delta qp).$$

This has been calculated using:

$$p = (0.1, 0.2, \ldots, 1)$$

$$q = (0.1, 0.2, \ldots, 1)$$

$$\delta = (0.1, 0.2, \ldots, 1)$$

As expected, the threshold level of s increases as p and δ increase. As p increases, PMA has a better chance of winning the suit, so the threshold value of s is closer to 1. As δ increases, it becomes less costly for PMA to pursue the suit. The threshold level of s decreases in q because as q increases, there is a higher probability that 15C is interpreted broadly, and rejecting the settlement and entering the lottery has a lower expected value in this instance. Table 5 shows the threshold levels for ranges of p and q for two cases, one setting δ at 0.2 and one setting δ at 0.8. Figures 5 and 6 are graphical depictions of Table 5.

What would be the threshold value of s under reasonable assumptions concerning the levels of p, q and δ? If:

$$p = 0.4$$

$$q = 0.3$$

$$\delta = 0.3$$

then:

$$s = 0.14$$

This implies that s must be greater than 14% of x for PMA to accept this settlement. This was surely satisfied, because in settling the PMA

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Table 5:

Threshold Values of s, given p, q and δ of 0.2 or 0.8

s	0.2										
		q									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
p	0.1	0.024	0.023	0.023	0.022	0.022	0.022	0.021	0.021	0.02	0.02
	0.2	0.047	0.046	0.045	0.044	0.043	0.043	0.042	0.041	0.041	0.04
	0.3	0.069	0.068	0.067	0.066	0.065	0.064	0.063	0.062	0.061	0.06
	0.4	0.09	0.088	0.087	0.086	0.085	0.084	0.083	0.082	0.081	0.08
	0.5	0.11	0.109	0.108	0.106	0.105	0.104	0.103	0.102	0.101	0.1
	0.6	0.129	0.128	0.127	0.126	0.125	0.124	0.123	0.122	0.121	0.12
	0.7	0.148	0.147	0.146	0.145	0.144	0.143	0.143	0.142	0.141	0.14
	0.8	0.166	0.165	0.165	0.164	0.163	0.163	0.162	0.161	0.161	0.16
	0.9	0.183	0.183	0.183	0.182	0.182	0.181	0.181	0.181	0.18	0.18
	1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

s	0.8										
		q									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
p	0.1	0.227	0.189	0.161	0.141	0.125	0.112	0.102	0.093	0.086	0.08
	0.2	0.377	0.328	0.29	0.26	0.235	0.215	0.198	0.183	0.171	0.16
	0.3	0.484	0.435	0.395	0.361	0.333	0.309	0.288	0.27	0.254	0.24
	0.4	0.563	0.519	0.482	0.449	0.421	0.396	0.374	0.354	0.336	0.32
	0.5	0.625	0.588	0.556	0.526	0.5	0.476	0.455	0.435	0.417	0.4
	0.6	0.674	0.645	0.619	0.594	0.571	0.55	0.531	0.513	0.496	0.48
	0.7	0.714	0.693	0.673	0.654	0.636	0.619	0.603	0.588	0.574	0.56
	0.8	0.748	0.734	0.721	0.708	0.696	0.684	0.672	0.661	0.65	0.64
	0.9	0.776	0.769	0.763	0.756	0.75	0.744	0.738	0.732	0.726	0.72
	1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

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Figure 5:

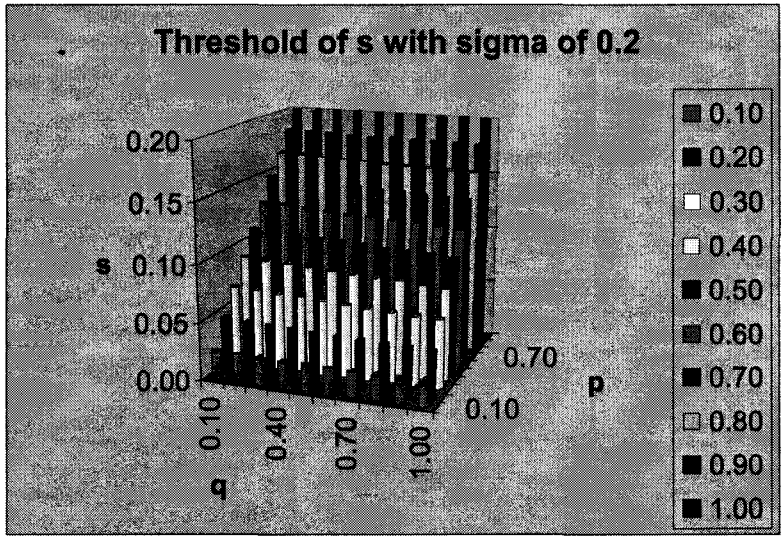
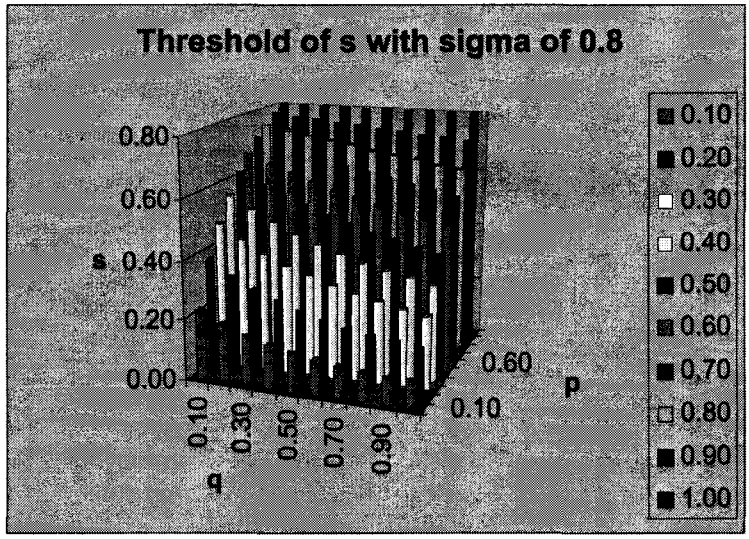


Figure 6:



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concedes only parallel importation. The gain in avoiding compulsory licensing would be valued at greater than 14% of x. Therefore, Accept dominates Reject for PMA under reasonable assumptions.

At SAG's first information set, what will it do? It is straightforward that for SAG, Settle strictly dominates Pursue, given that PMA will accept this settlement under the realistic assumptions above. The expected value of the settlement outcome to SAG is q multiplied by its payoff where Nature plays Broad, added to $(1 - q)$ multiplied by its payoff where Nature plays Narrow. The lottery payoffs for SAG are:

$$E[v]_{SAG} = q\,[\,p\,\beta^{2}(0) + (1-p)(\,\beta^{2}(-z)\,)] + (1-q)[(1-p)\,_^{2}(-y) + p\,_^{2}(0)]$$

$$E[v]_{SAG} = \beta^{2}(p-1)\,[zq + (1-q)\,y\,] < 0$$

Clearly, $(p - 1)$ is negative and $(1 - q)$ is positive given the assumptions around the values of p and q. This implies that the expected value of the lottery to SAG is negative.

Given that if SAG settles, it has been shown that PMA will accept this settlement, the settling payoffs for SAG are:

$$E[v]_{SAG} = q\,[\beta^{2}(1-s)x] + (1-q)\,[\beta^{2}(1-s)x]$$

$$E[v]_{SAG} = \beta^{2}(1-s)x > 0$$

As $(1 - s)$ is positive given assumptions around the value of s, the expected value of settling to SAG is positive. Clearly Settle strictly dominates Pursue for SAG. Therefore, SAG's dominant strategy is to offer to Settle, and PMA's best reply is Accept. But in that case PMA's dominant strategy at its first information set must be Settle, since $\delta x > \delta^{2}x$. Settling earlier lowers the impact of δ on the PMA's payoffs.

The outcome in which PMA offers to settle and SAG accepts the offer is thus the sequential equilibrium of the game, given the utility functions for the players as suggested in previous sections. We have thus demonstrated that these utility functions rationalize actual events in detail.

Conclusion

We conclude that the success of HIV/AIDS activists in publicly spinning the original court case as a battle over access to HIV/AIDS therapies complicated the game for both the South African Government and the PMA. The resulting threat of rising public demonisation increased the cost to the PMA of pursuing its suit, especially as

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enhanced legal and public scrutiny would likely have revealed the extent of its already achieved profits from HIV/AIDS drugs. At the same time, the value to the Government of securing the right to compulsory licensing diminished, given the conflict between this goal and its desire not to become responsible for antiretroviral provision under *any* legal regime. For public relations reasons, however, the Government could not directly reveal this preference. Maintaining it as private information gave it a strategic advantage over PMA in any case, one which it used to extract the PMA's non-demurral when it claimed legal and moral 'victory' while in fact conceding the very issue that had been the original point of the dispute. We defend this interpretation by a method of broad consilliance between empirical evidence concerning both parties' utility functions, and formal rationalization of the strategic dynamics of the interaction. We offer no normative comment of our own, leaving such judgments to individual readers.

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Inequality of Wealth and Income in a Technologically Advanced Society

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The author notes that inequality of wealth and income is increasing in the United States of America despite the fact that nationwide the level of education, which has traditionally been associated with higher income, has risen. He discusses attempts to reduce economic inequality, but concludes that in an economy which is energized by high levels of technology a reduction in disparities of income is not easy to obtain.

Key Words: Education, technology, wealth, income, inequality, unemployment, redistributive taxation, welfare.

Many are aware that inequality of income and wealth in the U.S.A. has increased considerably especially since around 1980; this trend has continued even during a period of low unemployment and high growth. The top quintile of households increased their share of income from 43.7 to 49.6% between 1980 and 2000, whereas the bottom quintile experienced a drop in their share from 4.3 to 3.6%. The gains in relative share of the top five percent (from 15.8 to 21.9%) and one percent are more newsworthy but perhaps less important and less lasting. Some regard this degree of inequality as a problem, although there is no consensus on what would be a better distribution of income, nor on whether or what measures could be taken to reduce inequality of income. Some see the issue in terms of poverty and its alleviation; others in terms of the overall distribution of income and its implications for levels of living and opportunity.

Reduced inequality is possible, and is potentially compatible with a thriving economy, but an economy perhaps condemned to high unemployment, as in most West European countries with social safety nets finer-meshed and more extensive than that of the U.S.A. The United States has a more unequal income distribution than nearly all other advanced nations. Sweden and Norway achieve a much more egalitarian outcome by government intervention: spending more than half their GDP and redistributing a large share of it; France and Italy are not far behind (Muth 1997). Nevertheless, the increase in inequality has not been peculiar to the United States; many other industrial

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countries have also been experiencing it. Nine of 13 members of the OECD studied also experienced increased inequality; only France, Finland and Denmark experienced a decrease, while Canada remained unchanged (Burniaux et al. 1998, Table 2.2).

Table 1.

Share of Aggregate Income Received by each Quintil and Top 5% of Households

	Quintiles					
Year	*Lowest*	*Fourth*	*Third*	*Second*	*Highest*	*Top 5%*
1970	4.1	10.8	17.4	24.5	43.3	16.6
1975	4.4	10.5	17.1	24.8	43.2	15.9
1980	4.3	10.3	16.9	24.9	43.7	15.8
1985	4.0	9.7	16.3	24.6	45.3	17.0
1990	3.9	9.6	15.9	24.0	46.6	18.6
1995	3.7	9.1	15.2	23.3	48.7	21.0
2000	3.6	8.9	14.9	23.0	49.6	21.9

Source: Bureau of the Census, Current Population Report P60-213, *Money Income in the United States 2000*, Table A-2

By contrast, the U.S. federal government spends less than 20 percent of GDP, applying a much smaller share of resources for redistribution. State and local governments spend an additional 13 percent, of GDP, but most of this is not available for redistribution. Since states vary widely in per capita income and poverty, any desired reduction in inequality of income must be accomplished on a national basis if it is to address large interstate inequalities. Both parties in the recent election called for tax cuts, not increases, to be implemented over the next ten years.

Of thirteen OECD members studied, only Japan has not found it desirable to reduce poverty. The United States reduced poverty (defined as half the median household disposable income) through taxes and transfers of 20 percent. of GDP The other twelve OECD countries, except Japan, reduced poverty much more, with Sweden lowering it by 80 percent (Burniaux et al 1998, Tables 5.4, 5.7).

The unintended consequences of high taxes and a large share of income unearned could be greater in the U.S. than in Scandinavia. But greater or not, there is no political prospect of taxing away more than half of income and reallocating much of it to the poorer half of the U.S. population even temporarily, much less on an indefinitely continuing basis. Such a policy conflicts with the core beliefs of the nation. The U.S. accepts more inequality than many nations because of a prevalent belief

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in the benefits of economic growth and progress for the society and upward mobility for individuals. Were this a zero-sum society, one person's gain would be viewed as another's loss and distribution would become a dominant concern. In a positive-sum society the attitude toward government is focused on taxes; in a zero-sum society it is fixated on benefits, with greater pressure for and tolerance of high taxes.

Intergenerational concentration of wealth and its derivative income is likely to grow, even without repeal of the estate tax, because in the past families averaged four or five children whereas now families average just two. Furthermore, the impact of massive immigration of relatively unskilled labor tends to keep wages low at the lower end of the income scale.

Proponents of wealth equalization claim that inherited wealth lacks the ethical appeal of wealth earned. There are other conflicts of values. At one extreme, an egalitarian sect objects to any inequality, including meritocracy; at the other a Social Darwinian sect believes in unimpeded economic selection. Egalitarians with a regard to outcome conflict with egalitarians with a regard to process. Others are in the muddled middle which favors in terms of abstract nouns a degree of inequality compatible with equality of opportunity and meritocractic rewards, but disagree on the meaning of equal opportunity – is it limited to income, or does it extend to other desiderata? In the radical camp there is disagreement on the rewards merited by individuals, even on their property rights over the abilities, ambitions, and energies that differentiate them. Kolm describes the polar case of equality of satisfaction: "..no individual is *a priori* entitled to the particular benefit of any resource, notably his own, including his consumption capacities and in particular his satisfaction capacities." (Kolm 1995, p.66) Other egalitarians reject a reward structure set by free enterprise labor markets. Then there are disagreements on the role of government in reducing inequality, reflecting different attitudes toward authority and beliefs about the unintended consequences of some redistributive policies.

Even without consensus amongst egalitarians on desirable distribution, there is general agreement on the desirability on some kind of other of policy designed to reduce inequality. The U.S. federal government has concentrated on reducing inequality *ex post*: redistribution via progressive income taxes and government transfer policies such as unemployment compensation, welfare, food stamps, housing subsidies. These have not prevented inequality increasing, nor even were intended to, despite the fact that spending on most of these policies

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grew; but they have done much to alleviate economic hardship. The share of income of the bottom quintile rose from 3.6 to 4.8 percent in 2000 after subtracting taxes and adding transfers, in a year of high employment and low unemployment.

Now the U.S. is shifting emphasis to *ex ante* policies, designed to reduce inequality of income before taxes and transfers, in particular policies on education and health, which are regarded as long run determinants of income. This is a shift from short term reactive policies to longer-term preventive policies that would reduce inequality permanently. But over three decades characterized by increased inequality, access to both health care and higher education has become more equally distributed. This inverse relation between inequality in income and equalization in health care and education raises serious questions about long term policies and their implications.

Policies Redistributing Income

Redistributive policies include wages, taxes, and transfers or expenditures. The main public wage policy is the federal minimum wage first enacted in 1938 when unemployment was still in double digits. Its effect is limited. The legal minimum wage must balance earnings increases against risks to domestic jobs from their transfer abroad and from labor-saving technology, both of which have been significant factors in recent decades.

Progressive taxes take from the rich and the well-to-do, but until recently did nothing for the poor. That pleases some egalitarians, but others are concerned with the incomes of the poor, not just the inequality of distribution. Now many low income earners benefit from the earned income tax credit enacted in 1975. Tax progressivity is more a means of raising needed revenue than redistributing income. Tax rates that are too high on the better-off may harm the poor through adverse effects on investment as well as on consumer demand. Few propose eliminating taxes on consumption, which would increase purchasing power of the poor directly and immediately, or cutting the payroll tax, a greater burden on lower income workers than income taxes. Federal income taxes were reduced in the 1980s and raised in the 1990s; inequality increased in both decades, though more in the 1980s. In particular, the share of income after taxes of the top quintile of households rose not only following tax cuts but also slightly even following tax increases. (Bureau of the Census 2001, Table RDI-7)

The main distributional policies are transfers: government spending

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to benefit needy individuals and families. Their intent is to provide a safety net for those in need, incidentally reducing inequality. Financing of transfers at the federal level is progressive, but many states and localities have tax systems – property, sales, excise taxes – which proportionately take more from the poor than from the rich. Major transfers to the low income members of society have included AFDC (Aid to Families with Dependent Children), food stamps, housing subsidies, unemployment compensation. Long-standing concerns about counter-productive consequences especially of AFDC have increased since the major reform of welfare in 1996. Spending on transfer programs increased in real terms even during the recent period of low unemployment and decline in unemployment. There is little basis for claims that increased inequality is to any degree the result of declines in these programs.

Were this a static society, it would be easy to assess the net contribution of its redistributive policies, however, today's poor are not necessarily yesterday's, nor possibly tomorrow's. There is too much mobility for that. All intertemporal comparisons are flawed. Nevertheless, the long term increase in income inequality continues to attract attention.

As to Social Security, its aim was limited to improving the economic lot of the aged through contributions during their working years, redistributing individual income over a lifetime. Most recipients receive far more than their contributions for a number of reasons, particularly their increased longevity. Social Security remains a current subsidy from workers to retirees. The income of retirees would have been lower than that of the rest of the population without Social Security. Payments reduce inequality among retirees. Thus Social Security reduces inequality at a point in time, and over a lifetime, but not by much.

The net change in share of income as a result of taxes and cash payments is quite modest, as shown in Table 2. Over the past 22 years the gain of the bottom quintile is surprisingly stable, varying little between recession and boom years. One would not expect it to be affected much by changes in federal income tax rates. The loss of the top quintile shows greater variability, reflecting tax cuts in the 1980s and tax increases in the 1990s but not so much the level of economic activity. 1986 is an outlier, apparently a response of high-income individuals to the Tax Reform Act of 1986. Declines in rates provided an incentive for everyone who could to postpone taxable income from 1986 to later years. But the main explanation was a large increase in capital gains

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reported in 1986, in response to impending increases in rates.

Inequality of *consumption* is a more fundamental concern than inequality of income. The linkage between consumption and income is loosened not just by free food and medical care and subsidized housing for the poor, but by free education and free access to a wide variety of public goods: parks, libraries, playgrounds, some museums.

Table 2.

Change in Percent Share of Aggregate Income Received by each Quintile of Households by Subtracting Taxes and Adding Transfers

	Quintiles				
Year	*Lowest*	*Fourth*	*Third*	*Second*	*Highest*
1979	+1.1	+1.6	+0.2	+0.1	-3.0
1980	+1.3	+1.4	+0.8	-0.2	-3.2
1981	+1.2	+1.5	+0.7	-0.3	-3.2
1982	+1.3	+1.5	+0.6	-0.4	-3.0
1983	+1.2	+1.3	+0.3	-0.3	-2.4
1984	+1.2	+1.2	+0.4	-0.7	-2.2
1985	+1.2	+1.1	+0.5	-0.5	-2.2
1986	+0.9	+0.9	-0.3	-1.0	-0.4
1987	+1.2	+1.3	+1.1	-0.6	-3.0
1988	+1.2	+1.4	+0.6	-0.7	-2.5
1989	+1.2	+1.5	+0.4	-0.2	-2.8
1990	+1.2	+1.6	+0.6	-0.2	-3.1
1991	+1.2	+1.6	+0.5	-0.2	-3.4
1992	+1.1	+1.6	+1.0	-0.3	-3.6
1993	+1.3	+1.6	+1.0	-0.1	-3.8
1994	+1.2	+1.5	+1.0	+0.3	-4.0
1995	+1.3	+1.7	+1.1	-0.1	-4.1
1996	+1.2	+1.9	+1.0	0.0	-4.0
1997	+1.2	+1.7	+0.9	0.0	-3.7
1998	+1.1	+1.4	+1.1	-0.2	-3.2
1999	+1.0	+1.4	+0.7	-0.3	-2.8
2000	+1.0	+1.3	+0.9	-0.3	-3.0

Source: Estimated from Bureau of the Census, *Historical Income Tables: Experimental Measures,* Table RDI-7, 2001.

Policies Redistributing the Determinants of Income

Health care and education and training programs and policies are expected to reduce inequality *ex ante*, by improving the earning ability of lower income groups. These are long term expectations, but some programs have been in place long enough for a preliminary assessment. One should add changes in behavior, since not all improvements in health (low-fat diets, reduced smoking), not all increases in high school

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completion and college attendance, are the result of public policies. Outcomes combine the impacts of public policies and autonomous changes in behavior. In the case of health care, technical progress is also a factor. The relation between health and income is not unidirectional. The impact of health on income refers to the individual worker during working years. The main impact of income (ignoring genes) on health refers to parental income and the health of their children: it is intergenerational (Smith 1998; Smith 1999). Education and income also influence each other; it is not a simple causal relation. The impact of education on income refers to the individual worker, whereas the impact of income on educational attainment and on the quality of education is intergenerational, referring to parental income primarily.

Health

The share of GDP spent on health care in the U.S. has increased from 5.1 percent in 1960 to 14 percent in 2000 and has become more equally distributed as a result of new government programs. Some of this increased share of income reflects an aging population, but most of it reflects improved quality and increased quantity per capita, not price increases (Cutler and McLelland 1998, p.1016; Triplett 2001). The principal health policies are Medicare and Medicaid, both enacted in 1965. Medicare is partially contributory, heavily subsidized, for the elderly, most of whom are not working, hence its impact on earnings via better health is small. It does have a significant impact on levels of living, by reducing out of pocket medical costs, and no doubt reduces inequality of living levels among recipients.

Medicaid is another matter; most recipients are below retirement age, many are young children. There are no out of pocket costs to the recipients. It increases income available for non-medical spending among the poorer members of society, contributing toward lower inequality of consumption if not of income. This is the short run effect. The long run effect is that better access to medical care improves chances for educational achievement and performance in school and in the work force. Thirty-five years have passed since Medicaid was instituted. It has greatly access to medical care among the poor, and thereby reduced inequality of consumption. But although the United States spends a much larger share of GDP on health care than any other nation, and has nearly tripled that share since 1960, economic inequality has increased.

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Education

Education has been widely viewed as the open sesame to good jobs, desirable occupations and careers, as well as to income. Some have been puzzled by the fact that they can point to an increase in educational attainment and a large reduction in inequality of attainment in the work force and the adult population as a whole but that inequality of wages has still increased. Others would point out that it does not take into account the effect of the addition of large numbers of less educated and less skilled immigrants to the work force, which serves to keep down the wages of unskilled workers. But even apart from that, this vision fails to distinguish between individual and collective opportunities and gains. More education and training may benefit specific individuals but have little effect on the occupational structure.

A large increase in educational attainment began much earlier than Medicaid and Medicare, immediately after WWII, with enactment of the GI Bill of Rights. The generation that benefited from it is now past retirement age, but its example has been followed by the generations that came after. The proportion of the population 25 years of age and older without a high school diploma sank from 45 percent in 1970 to 16.6 percent in 1999, the proportion with four or more years of college jumped from 11 to 25.2 percent (U.S. Dept. of Education 2000, Table 8). This trend is continuing, since young adults 25-29 have a higher attainment than their seniors, 28.2 percent have college degrees. (Others finish two-year programs, most of which are job training programs, which in the not so distant past were taught in high school.)Inequality in educational attainment has been substantially reduced. In 1999, the attainment of 80 percent of persons 25 to 64 years of age was concentrated in a four-year range, from high school graduation to a bachelor's degree (U.S. Dept. of Education 2000, Table 377). In 1970, to reach an equivalent concentration, 78 percent, the range of educational attainment must be extended to seven years, from the 7th grade through the second year of college (U.S. Dept. of Education 1972, Table 364).

Increasing educational attainment of the employed labor force was a bottom-up process, greatly reducing differences in attainment. The difference in median educational attainment between the most educated occupation, professional, and the least educated, farming, shrank dramatically from 7 years in 1970 to 4.5 in 1991; for non-farm laborers, the gap narrowed from 5.8 to 4.4 years (U. S. President 1976, Table B-12; U.S. Dept. of Education 1992, Table 364). Changes in occupational classification make it impossible to extend this time series to a more

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recent year, but the median has risen further and the expectation is that differences in the level of educational attainment have been further reduced.

Since educational attainment has risen and become much more equally distributed than before 1970, many have expected a decline in wage and income differences; but the reverse has happened: earnings differences, in particular between college graduates and others, far from declining, have increased. There was a large increase in wage differential between college graduates and others in the 1980s (Blackburn and Neumark 1993), further widening in the 1990s. Possible supply-side explanations: a reduced correlation between college education and ability, or a lower level of ability, would reduce the supply of workers with both high educational attainment and a high level of ability, increasing the wage premium. However, neither happened, if anything the reverse took place.

There are many possible reasons for rising wage inequality, not mutually exclusive, and their relative importance is a matter for speculation (Stewart 1998: pp. 57-92). But it is important to learn why equalization in educational attainment has coexisted with increasing instead of decreasing economic inequality. Correlation is not causation. But how to account for it? One possible explanation is that the increase in educational attainment lagged behind the increase in share of jobs and occupations requiring higher education, which in turn implied a decrease in share of jobs not requiring a college education. In fact the increased inequality of wages was attributable predominantly to a decline in real wages for less-educated workers, not an increase for college graduates. This suggests no shortfall in college graduates for jobs requiring college, but substantial excess supply of workers with only a high school education or less. (Temporary shortages in highly skilled workers have been met by selective immigration of qualified workers.)

Perhaps some of the increased wage inequality is a decades-long adjustment to increased labor force participation of women and higher educational attainment of women and minorities. Only 42.6 percent of females 16 and older were in the labor force in 1970. In 1999 the participation rate was 59.5 percent, higher for every age group under 65, including females 16-19 years of age. For the age group 25-54, the increase was from 50.1 to 76.8 percent (Purcell 2000, p. 21). The beneficiaries of the GI Bill of Rights were predominantly white males. The biggest increases in college attendance and completion in recent decades have been females (who now outnumber males) and minorities.

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For a number of reasons: job and wage discrimination, younger average age than male workers, and choice of majors leading to limited job opportunities and/or low wages, the increased percentage of females may have contributed to wage inequality among college graduates. At the same time, college graduates became a much larger share of the labor force. If we have been witnessing a temporary adjustment, then we should be seeing by now a phasing out of this adjustment, a trend toward reduced inequality of wages and incomes. Such a reversal is not in sight at this time.

A partial explanation for increasing wage inequality is that differences in ability between college graduates and others have increased. The evidence includes the difference in high school senior class standing between those who go to college and those who do not, as well as in IQ. Before the GI Bill of Rights, there was little difference; socioeconomic status was the main determinant of college attendance; in recent decades the difference has been large (Taubman and Wales 1972). As determinants of college admission and graduation have shifted from socioeconomic to ability criteria, differences in ability between college graduates and non-graduates have widened (Bishop 1991; Herrnstein and Murray 1994: pp.45-48). With some 88 percent completing high school, that high school graduation is no longer selective by meritocratic criteria. Two-thirds of graduates enter college at some point.

Greater equalization of educational opportunity in recent decades has enlarged the share of high-ability students who go to college and graduate, perhaps increasing inequality among graduates. Discriminatory entry barriers not only to college but also to well-paid jobs and occupations have greatly diminished, and financial aid and education loans have reduced economic obstacles to college admission. This has been especially important for women, who are more than half the population.

The relation between educational attainment and wages differs by the level of ability. According to Grogger and Eide (1993), this increased wage differential cannot be explained by increases in standardized test scores of college grads or in their high school grades, at least not for men. All the increase in the differential wage has been for workers with high academic ability (Blackburn and Neumark 1993). College graduate workers with below average academic ability experienced a decline in wage differential. For men, one quarter of the increased wage differential can be explained by changes to high wage-potential majors; for women, increased returns to math ability are important in explaining the

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increased wage premium (Grogger and Eide 1993). Blackburn and Neumark [1995] estimate that failure to consider ability differentials overstates the return to education by about 40 percent.

Grogger and Eide (1995) found that the wage premium rose between 1977-79 and 1986, 13.5 percent for men, 7.7 percent for women. But the wage premium varies greatly by major, which serves as an indicator of skills acquired in college. Even standardizing for occupation, major-specific wage premiums vary greatly. The trend away from low-skill majors such as education to high-skill majors such as engineering (their categorization) account for one fourth of the increase in the wage premium for men, and one third for women. The wage differential noted above between college graduates and others, and among college graduates of different levels of ability, continues to widen throughout working life. Hence what became noticeable in the 1980s will likely continue until the 2020s and 2030s at least. This is the result of greater opportunity and higher educational attainment.

Accordingly, it is a mistake to focus only on wage differences between college and high school graduates, ignoring the large differences among college graduates. The differences in GRE (Graduate Record Examination, taken by one third of college seniors) subject scores by major are very large: math majors scored 775 in 1997-8; the sciences (geology excepted), engineering and economics scored above 600. At the other extreme, sociology scored 425 and most of the humanities scored in the 400s and low 500s (U.S. Dept. of Education 1990, Table 279; Educational Testing Service, unpublished data). The differences have widened; twenty years earlier the range was from 450 to 692. The high-wage premium majors tend to be the majors with high GRE scores.

These numbers are not strictly comparable. The cognitive requirements for achievement are multiple, diverse and vary widely between majors. What these numbers tell us is what leading professionals in each field think about seniors majoring in that field. However, very large differences do suggest substantial differences in ability. The high scoring majors are related to well-paid occupations; the low-scoring majors face few openings in related occupations, education excepted, but teaching is one of the lower-paid professions. Whatever the reasons for these large differences in achievement of college seniors or for choice of majors, and for the relations between scores, majors, and subsequent jobs and earnings, they raise doubts about higher education as blanket guarantee of high income or as means of reducing inequalities in earnings.

When college graduate workers were asked a year after graduation

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whether their job was related to their degree, and whether a degree was required for their job, 56 percent felt a degree was required, and 75 percent that their degree was related to their job (U.S. Dept. of Education 2000, Table 385). But there was a big difference between majors in math, physical sciences, computers, engineering, education, and majors in health sciences, who predominantly answer yes to both questions; and history, humanities and social sciences, the majority of whom said a degree is not required and nearly half of whom said their job was not related to their degree. (By implication, for many of the latter there is only a tenuous relation between degree, jobs and wages.) Most business majors find their job related to their degree, but nearly half say the degree is not necessary. (When asked whether their jobs are possibly career-related, the differences between majors are much smaller.)

The high-wage premium majors happen to be the ones most likely to find jobs in their fields, as well as the ones whose GRE subject matter scores are high. One might suggest that it is job prospects in their field that explain the high-premium wages. Conversely, low-wage premium majors are in oversupply. The distribution of occupational opportunities is dictated not by personal preferences or abilities, but by prevailing technology and composition of demand. Even if all workers were equal, all work is not. Jobs and occupations vary in productivity, as do their occupants. This is the immovable obstacle to egalitarianism. However, the fact that the wage premium varies widely by major even after adjusting for occupation does imply that the differences in subject matter GRE scores by major are indicators of labor market-relevant ability.

A plausible but troubling possibility is that the nationwide increase in educational attainment, whatever happens to educational distribution, has itself promoted inequality: differentials in ability, interest, energy, associated with differential educational achievement are magnified by additional education. In the words of St. Matthew 25-29, "For unto everyone that hath shall be given and he shall have abundance; but from him that hath not shall be taken away, even that which he hath." Education acts like a lever; the longer the lever, the greater the level of achievement of the student, and this leverage enhances individual performance more than in proportion to the individual's initial ability, motivation, energy. Becker (1975, p. 101) assumes that ability increases the marginal benefit the individual acquires from schooling, one reason for the positive correlation between ability and educational attainment.

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This is consistent with a college wage differential that has increased almost exclusively for the abler college graduates. But it applies also to increased educational attainment across the board: the best benefit much more than the worst. The higher the educational attainment of the population, the greater the inequality in performance (ability plus schooling). The expectations of many students are not realized: frustration will prevail, for achievement is seen in relative terms, in comparison with one's peers.

Why did the gap between the wages of college graduates and others begin to widen around 1980, and why has it continued to widen for two decades? It did not begin earlier because the large increases in graduating classes in the 1960s and 1970s depressed the wages of college graduates. Also, selectivity of college admissions declined between 1961 and 1972, rising continuously thereafter (Bishop, 1991), with a lagged effect on wages. It has not ended because inequality of earnings by educational attainment and by level of ability continues to increase throughout working life. Thus it is not necessary to identify causes persisting over decades or coincident with the growth in inequality. Taking 1980 as an approximate starting date for rising inequality of earnings, the youngest cohort affected would have been born in the late 1950s. This college graduating class, or better, the higher ability group in this class, would then contribute to increasing inequality of earnings, a process which still has at least two decades to run its course.

In sum, the reduction in inequality of educational attainment should reduce wage inequality; but the higher average level of educational attainment and increased inequality in ability between college graduates and others contribute to increased wage inequality. I can quantify neither the effect, nor the net effect of their sum, beyond noting that wage and income inequality overall, and by level of educational attainment, have been increasing, not falling.

Finally there is the observation, and prediction, of Will and Ariel Durant, among others: "Every advance in the complexity of the economy puts an added premium upon superior ability, and intensifies the concentration of wealth, responsibility, and political power." (Durant 1968, p.77) This view is independent of educational attainment and its distribution. It refers to the demand for ability and skill, based on the higher productivity of persons engaged in technologically advanced work roles, whereas the previous changes refer only to their supply. Technological advance increasing demand for highly skilled and able workers widens wage differentials by skill, occupation, ability, and

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education. It accounts for some of the increased wage differential accruing to abler college graduates, who are concentrated in the majors most affected by technological change. But technical change is a gradual continuing process, whereas educational attainment and the role of ability in attainment have experienced much more abrupt changes.

The belief that the achievement and income of individuals can be improved by education, as well as by health care, is well-founded in experience. But the hope that raising standards of education will reduce inequalities in achievement assumes implicitly that there are no inequalities in ability as determinants of achievement. Only then will all benefit equally from equal opportunities. Education is not just about market skills, jobs, occupations, and income. Raising the floor on educational attainment and improving its quality may contribute to productivity and levels of living and to the non-economic aims of education. But there is no evidence that it has reduced inequality.

Problems with Egalitarian Policies:

Alternative Strategies and their Inherent Difficulties

To consider alternative means of reducing inequality of income one would need to ask, what are the determinants of differences in income, other than the fortunate choice of parents and random dispensations of Lady Luck? An adequate answer would be book-length. But we can make do with five generic determinants. Little can be done about the distribution of income-relevant abilities and propensities. Policy makers have tended to associate eugenics with National Socialist Germany of the 1930's and 1940's and so have rejected genetic policies, but they are practiced by individuals, in their choice of mates, in decisions whether to have children. On the other hand, emphasis on environments encourages us to place blame, but also offers less controversial opportunities for remedial action.

A second determinant is promotion of abilities through education and training. There is much we can do individually and as a society, but as suggested above, the result could well be increased inequality. At some point, reduced inequality can only be achieved by lowering the marginal benefit of increased educational attainment, either by advancing those whose benefit from additional education is small, or by restraining further attainment for those whose benefit is large. This road to equality sacrifices efficiency and growth to the egalitarian god. It violates our values as enshrined in the Declaration of Independence: "All men [and women] are created equal ... endowed with the right to

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life, liberty, and the pursuit of happiness." It was another country that proclaimed liberty, equality, fraternity. Meritocracy spells inequality.

Years of educational attainment is an insufficient indicator of investment in human capital. Schools vary greatly in quality. Since abler students are likely to go to better schools and to be taught by better teachers, differences in quality of education magnify differences in achievement. Differences in quality can be reduced. But we should not expect too much.

Rising educational attainment as an indicator of economic competence has been compromised by Henry Ford, who made possible the geographic segregation by income and, incidentally, by other characteristics which differentiate central city from suburban schools. It has been weakened by a shift in school agenda toward sports, self-esteem, recreation and cultural indoctrination to the neglect of cognitive skills, an agenda now prominent in many college campuses as well as in lower schools.

Third, schools are only one factor in achievement. Even the worst schools graduate the occasional over-achiever. Family environment, peer groups, community values influence what schools can accomplish. The influence of extended family and community is of great importance: single-parented and latch-key students even of impressive genetic endowment may labor under disadvantage. Behavior must change. These factors are largely beyond the reach of public policy instruments.

Fourth, income and the way it is spent it helps shape demand for diverse abilities and influences the direction of education and training. Prospects of persuading consumers to spend less on doctors and lawyers and more on the services of high school dropouts are bleak. Hypochondria, conspicuous over-consumption and designer labels carry the day.

Finally, and perhaps most important, products available through new technology influence consumer demand, which together with prevailing production technologies, determines the skills required to produce the goods demanded. Some would say that technology is autonomous, that society has no control over changes in demand for diverse skills. Others deny this, pointing out that development of much technology responds to existing shortages of labor and particular skills, in the same way that students and workers adjust their education and training to perceived market opportunities. But new products: electronics, computers, pharmaceuticals, plastics, which have dominated technological progress recently, are not developed in response to labor force skills, though their production adjusts somewhat to labor

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availabilities both here and abroad.

In the United States, new technology has increased the demand for new and high level skills, contributing to economic inequality. We do not know what future technology will imply for wage differences. Past efforts to control the rate and direction of technological change have concentrated on protecting the jobs or wages of skilled craftsmen, or of low skill factory workers. They never succeeded in the long run. Today efforts are directed to minimize social costs - the unintended impact of technological change on health, environment, community. Any influence on inequality is incidental and its direction uncertain. There is no reason to believe that there is the will or ability to control the direction of technology toward a goal as abstract as that of reducing inequality.

By default what remains are the *ex post* policies of income redistribution followed in the USA, perhaps enhanced in scale, as in West European countries. But they would have to be improved in effectiveness to avoid inducing the double-digit unemployment rates which have plagued many European nations, requiring increased transfer payments.

Greater equality of consumption is a feasible goal, even if equalization of incomes appears to be unattainable. A shift of focus from equalization of income, with its hidden ingredient of envy, toward equalization of consumption, leveling up instead of leveling down, has some claim to moral superiority. But attaining greater equality of consumption by increased public expenditure would require taxation of incomes. With the current distribution of income it would have to be progressive in practice, otherwise it could not generate sufficient revenues. According to the law of unintended consequences, incentives to work and to invest would decline.

If society does not choose to allocate a larger share of resources for redistribution, an alternative is to preserve the conditions under which inequality is widely accepted. These are open if not equal opportunity, and growth in the supply of desiderata that are unequally distributed. Without growth, opportunity is limited, no matter how equal. Continuing growth and opportunity is possible for some desiderata, but not for physically or socially limited goods, nor for those desiderata whose growth imposes serious negative externalities. Equality and opportunity conflict, and attempts to manage this conflict will undoubtedly continue to affect the shape of the society in which our children will live.

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BOOK REVIEW ARTICLE

IQ and the Wealth of Nations
Richard Lynn and Tatu Vanhanen
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Differential Intelligence and National Income

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That populations which possess high average IQ (probably for genetic reasons) tend to have high incomes is an obvious hypothesis, but a very politically incorrect one. Hence it is one that has seldom been even mentioned in the literature on economic development. However, Richard Lynn and Tatu Vanhanen in their *IQ and the Wealth of Nations* have not only put forward this hypothesis, but tested it. Lynn, a United Kingdom psychologist, is probably the world's leading expert on international comparisons of intelligence. In the course of other work he has accumulated a massive database of studies in which IQ tests were given in different countries. Because there are a variety of different tests, scored in different ways, an appreciable amount of work had to be done to make all of the scores compatible. Because tests scores appear to be increasing over time (for reasons that are unknown, although Lynn has speculated that improved nutrition is a major part of the explanation), scores also had to be adjusted for when the tests were given. Vanhanen, a Finnish political scientist, has specialized in comparisons of different nations with different political systems. The result of this international collaboration is a highly provocative book that is a major contribution to the literature on economic development.

Most readers who are interested in why some nations are more highly developed than others (economists, sociologists, political scientists) know little about intelligence. Lynn and Vanhanen start by summarizing the literature on the nature of intelligence, material that is found in books by Jensen (1998), Seligman (1992) and Snyderman and Rothman (1988). While many mental abilities have been identified, these all prove to be correlated with each other. With factorial analysis a

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common factor can be extracted. This is usually referred to as g and is the best measure of intelligence. However, various intelligence tests are correlated with g and provide adequate measurements of the concept. In the earliest literature, intellectual ability of children was measured by mental age. This was converted to the intelligence quotient by dividing the mental age by the chronological age. Today intelligence scores are measured on a relative scale, but the scores are adjusted to give a measure that is roughly equivalent to the ratio of the mental age to the chronological age. This is referred to as the intelligence quotient, abbreviated IQ.

Within countries intelligence scores have repeatedly been shown to relate to earnings. The best known book discussing this is *The Bell Curve* (Herrnstein & Murray, 1994). Other relevant material is found in Gottfredson & Sharf (1988) and Hartigan & Wigdor (1989). It is not hard to discover why intelligent people earn more. Intelligence is closely related to both trainability and proficiency. The more intelligent people are more easily trained, and can be taught skills that are virtually impossible for the less intelligent to learn. As a result intelligence is found to be closely related to how far in the education system an individual goes. Secondary school graduate are found to be more intelligent than primary school graduate, university graduates more intelligent than secondary school graduates, and graduate school graduates more intelligent than the typical university graduate. High intelligence is required for success in the professions, including engineering, science, and medicine.

To some this might merely seem to be evidence that intelligence is a learned trait that is taught by the education system. However, the evidence does not support this. At early ages children have not yet been exposed to much education. All the children in a particular school will have been given the same education. Yet the children differ widely in which items on a test they pass, and hence on measured IQ. This intelligence measured at an early age predicts later intellectual achievement. Furthermore the items tested at say age five are simple enough so virtually all adults can do them easily. Thus, if at a later age these same children (or the adults they become) score highly on tests it is not because at age five they had already mastered the tasks they are later tested on. Thus, it appears the difference in intelligence cause the future differences in education. Clearly, future differences in education cannot cause earlier differences in intelligence.

If intelligence affects traits such as education, achievement, and

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income, one would expect that the regions and nations with lower intelligence populations would have lower incomes and lower levels of achievement. This expectation is tested for regional data for the US and for France and found to hold. At the country level, the regional differences in intelligence are not large and are believed to be due to differential migration, especially the tendency of the higher intelligence parts of the population to migrate to the capital.

A natural question is whether it is even meaningful to talk about an average national IQ. By comparing cases where two tests had been given in the same nation, Lynn demonstrates that similar scores are achieved, thus showing that the reliability is sufficient to make international comparisons.

The heart of the book is the demonstration that national IQ and national incomes are correlated. There was a correlation of .733 between real gross domestic product for 1998 and the national IQ. This was calculated over 81 nations. These gross domestic products have been translated into dollars using exchange rates. Results are also presented for gross domestic products compared using purchasing power parity. Purchasing power parity measures what the incomes will actually purchase (in some countries a dollar will purchase more than in another country). It is available for fewer countries, but there were 65 countries with suitable data (for 1998). The correlation was a high .775.

This correlation between national income and national intelligence is not new. There is gross domestic product (or gross national product) going back to 1820. Correlations are provided for every decade since 1820 (and every year since 1976). Consistently, there are positive and statistically significant correlations. For instance, the correlation for 24 countries between 1820 gross national product and recent measurements of intelligence is .535. Note that since there are only intelligence data for recent years, the correlations are of income early in the eighteen hundreds with recent intelligence measurements, with well over a century-and-a-half separating the measurements. The authors do not view this as a major problem, since they regard (with reason) intelligence as predominantly determined by genetic factors. However, since even they would concede some environmental effects on intelligence, one would expect a lower correlation when the 1820 income data is explained by IQ data from near the end of the twentieth century. This is what was found. Spearman rank order correlations are also presented and show a similar pattern (showing a few extreme outliers do not explain the results).

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It is also possible that national IQ is related to the rate of growth in national income and product. Presumably high IQ populations are better at making productivity improving inventions and better at learning about inventions made elsewhere and bringing them into use. Such positive correlations are generally found. For instance, for the period 1820-1992 the Pearson correlation between the growth in gross domestic product per capita and the national IQ's of 24 countries was .643. Similar results are found for most long periods of time such as 1820-1900, 1910-1992, 1950-1990, and 1890-1990. There are exceptions for short periods, such as for growth in real gross domestic product for 1987-1998, where there was a small negative correlation. One explanation is that there are short term fluctuations caused by the business cycles and similar factors that are unrelated to intelligence.

Lynn and Vanhanen's point that devising new technologies requires high IQ is correct. However, since technology is mobile, this doesn't automatically make for higher incomes. Patents and licensing are only a small part of US or European income. However, in practice transfer of technology does seem to take many years. The new technology is usually used first in the country of development, where many well-paid jobs are generated. Eventually, the technology and jobs move to other countries. However the lag can be several decades. The machines that made the industrial revolution in Britain are now world wide, but Britain has moved on to other things. The US has continually benefited from this process with US firms and workers producing the latest, most modern products.

The relationship between income and national IQ becomes weaker and seems to disappear completely as national IQ rises. The authors ask whether a national IQ above 90 may be necessity for developing a modern industrial economy. They note the positive correlation disappears completely (and becomes weakly negative) if the regression is restricted to countries with IQs above 97.

The authors provided a similar analysis including all of the 185 countries with populations above 50,000. However, since IQ data was lacking for many of these countries, they had to be estimated (typically from data from adjacent countries). Using estimated data adds little to the power of the argument. For what it is worth, the conclusions from the estimated data (chapter 8) are similar to those from non-estimated data (chapter 7).

One of the weaker chapters deals with why there is a correlation between IQ and national income. Most of the mechanisms discussed are

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straightforward. A more intelligent population can more easily master the subject matter taught in the schools, everything from basic literacy to engineering. In turn, an educated population with mastery of these subject appears necessary for a modern industrialized economy. New products come from a scientific and engineering elite, which is more likely to emerge in a highly intelligent population. Even in cases where the inventors are not highly educated, inventing appears to require a high level of intelligence. Nations with high IQs can provide cognitively demanding services such as finance, trading, engineering, fashion design etc. These occupations pay good wages within a country. A country that can provide them for other nations will have a higher national income. The research within a single nation shows that intelligence contributes to job performance in most occupations. Thus, a high IQ nation will have most jobs performed better than in a low IQ nation. This would imply better management of enterprises and better performance of the skilled jobs on which a modern economy depends.

In discussing how high IQ benefits a nation, I suspect a major one (perhaps the major one) is talent for repairs. It often takes fairly high IQ to figure out why something is not working and how to repair it (even if not to just insert the new part). This seems to be a major limitation on mechanization in many countries. Many countries have workers capable of operating machines, and those who design machines can be in the developed countries (i.e. technology can be imported), but the repairs often have to be done in the factory or field. While engineering, top management, and other professional jobs may be filled by expatriates, the number of repairmen required is usually too great to be met from other than local sources.

The interesting question of the extent to which importation of skilled labor and foreign technology can substitute for a lack of native talent is not discussed. However, it does seem clear that where highly educated talent is required, importing the talent is a possible substitute for having qualified people already in the nation. The chief disadvantage to importing talent is that often one has to pay more than the going wages in the developed countries (part of this expense is for transportation, moving expenses, education allowances and other such non-wage items) for expatriate labor, while home-grown professional talent will often be available at less than the rates in developed countries. Using foreign talent may also involved extra expenses for items like translation and perhaps less efficiency due to less knowledge of local conditions. The obvious test of comparing low IQ countries that readily utilize

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foreign expertise with ones that do not is a study yet to be done.

One section claims that an intelligent population produces more intelligent leaders that in turn follow more intelligent policies. This is plausible. The properties of a normal distribution (believed to be a reasonable approximation for intelligence) imply that the higher the mean, the higher the upper x percent (from which the leaders come). In fact, the increase in the percentage of the population that is of high IQ is more than proportional. It is probably also true that on average higher intelligence leaders pick more intelligent policies.

However, at this point the book goes into an attack on the wisdom of socialist policies, asserting that more intelligent leaders are less likely to choose them. An empirical problem with this is that the Jews, who test well above average, have been advocates of communist and socialist policies. Part of this section criticizes the leadership of Britain in choosing less free policies, contrasting it with the policies German postwar governments chose. No evidence is given about the IQs of the leaders in question (while the German leaders are declared more intelligent, this is apparently just a deduction from the policies they chose), with the result being that much of this reads like a polemic against those advocating policies the authors disagree with.

Lynn and Vanhanen also discuss economic freedom (absence of communist or other planned economy) and show that the countries with more economic freedom actually are more prosperous than those with less. This effect is actually slightly stronger than the IQ effect. It appears to be especially important in explaining the prosperity of the countries with IQs above 90.

Lynn and Vanhanen do not discuss an important interaction between regulation (less economic freedom) and IQ levels. Regulation and planning require high IQ people, especially if to be done well. Anywhere high IQ people are needed to plan a new factory. However, in a highly regulated country a second team of high IQ people is needed to review it (with the proposing firm needing high IQ people to push it through). Even in the US or Europe much high IQ talent is devoted to reviewing projects and lobbying for them (lawyers are high IQ and do well financially). However, the US does have the talent.

In a country with few educated people and few capable of achieving high levels of education,these people should be used for developing and managing new projects, not for putting them through repeated reviews. If the government soaks up much of the talent for reviews, there is much less talent available to actually do the projects. If those reviewing an

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import request do not understand the technology it will be bad for the country. If the government can afford to hire the high quality talent, there is less talent for actually doing the projects.

Implications

The facts in the book raise a number of important issues which the authors do not discuss, probably for lack of space or expertise. Much of the economics literature has been written in terms of some countries having differing proportions of labor to other factors of production. It should be realized that countries differ in the proportion of high and low IQ labor. In the mainstream literature, if differences in labor quality are discussed at all, it is in terms of education. This standard economic literature talks about the number of trained people (say engineers), without discussing that some countries may be limited in the number of people who can be trained to perform certain occupations well.

Trade can be a substitute for movement of labor. Some products or steps in production use more skilled labor than others. Research and development (as well as design) can often be done in countries where high IQ, trained labor is abundant. Multinational firms are often able to put functions such as R & D or marketing in one country, and simple assembly in another. Rules that reserve certain businesses for local firms force these functions to be local, diverting high IQ workers from the supervision or repair that are needed to employ the large pool of low skilled labor some countries have.

The assembly line permits breaking manufacturing of some items into small steps that can be taught to even a low ability population. To do this requires a large output. Many consumer goods are suitable for this because they are required quantities numbering in the hundreds of thousands or millions.

Most industrial machines are used in smaller quantities. While millions of TV sets are needed, fewer machines are needed for producing TV sets. When the volume does not justify an assembly line, the workers often have to be smart enough to read a blueprint, or to be capable of doing long sequences of operations in the assembly process, and/or to frequently shift to producing a new product. This requires a higher IQ. Such trainable labor is likely to be more abundant in high IQ countries. These countries would ideally specialize in capital goods, scientific instruments, medical equipment, and other things produced in relatively small batches. These goods are likely to have higher inputs of engineering design than the mass-produced goods. While the design

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need not be done in the same country as the production, there are advantages to having them in the same place, or near to each other.

High IQ workers make fewer mistakes. Mistakes are more serious in some products (airplanes, medical equipment) than in others (clothing, toys). Some very complex products are rendered inoperable (or even worse, dangerous) if there is a single mistake in assembly. The high IQ countries would seem to be at an advantage in the making of products that must be free of defects.

With modern air transportation and communications some stages of manufacturing such as assembly or putting computer chips in ceramic cases can be done in a country with an abundance of unskilled (low IQ) labor, while other stages are done in a high IQ country.

Communications costs are dropping very rapidly with fiber optics and packet switching technologies. This permits locating some of the more skilled functions in high IQ countries. Examples might include trouble shooting an industrial process by an engineer in another country, with a local worker actually replacing the part that needs replacing. India is now providing medical transcription and call center services for the US. Some medical services could be delivered to the third world by remote technologies.

Free trade and the absence of preferences for local purchases are needed to exploit these opportunities for international specialization. The opportunities for international specialization and the gains from trade are greater in a world where nations differ in average IQ than in one where all labor is identical.

Adopting free trade does have implications for the distribution of income within countries. Third world countries can generally undersell western countries in industries requiring much low skilled labor. Clothing is the classic example. Low IQ workers in the US (many of which are minorities) will be hurt if goods produced by low IQ workers are imported. Pretending that everyone everywhere has the same IQ prevents rational discussion of such issues.

Economists have tended to discuss the gains from trade in models in which all labor in a particular country is of the same quality. At most, greater quality is viewed as merely making one high quality worker the equivalent of several low quality workers. In such models free trade benefits all workers. Someone laid off from clothing production can go into airplane manufacturing. If free trade leads to increased production of airplanes in a country this opens up more jobs in airplane production. However, if the displaced clothing workers cannot learn the skills

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required for the expanding jobs (and perhaps even their children cannot learn them), the effect of freer trade is to raise wages for the high IQ workers and to lower them for the others. The result is increased poverty in the advanced countries (especially among minorities), even if average consumption is raised.

In the low IQ countries increased trade raises the wages for the bulk of the population. However, increased trade (and immigration of skilled and professional personnel) reduces the number of high paid jobs, including the number of white collar and entrepreneurial jobs. Since the ruling classes are usually drawn from these individuals, one can anticipate opposition to such free trade measures from those who are in a position to make their opposition effective. Considerations of this type might help explain opposition to free trade in some poor countries.

Mention might be made of the ability of modern psychometric tests to identify those capable of benefiting from training for the more skilled occupations. The utility of such tests increases as the selection ratio goes up. If in a particular country only a minority will be able to be trained adequately, there are quite large gains from using a test to select those best qualified. Many poor countries cannot afford the solution of offering expensive schooling to everyone who wants it, as is done in the US. Modern test based civil services systems are probably more valuable in low IQ countries than in high income ones.

Differences in average ability explain a major puzzle in economics. Factor price equalization theorems hold that with free trade in goods produced with different factor proportions that factor prices will be equalized. In particular, wage rates will be equalized. However, it is evident that there are vast differences in wages in between countries. As long as labor is considered to be uniform in quality this observation is a problem. However, once it is realized that labor quality varies between countries, the mystery is at least partially solved.

Tests are especially useful in countries with traditions of nepotism. The reader of Klitgaard's (1991) "Tropical Gangsters: One Man's Experience With Development and Decadence in Deepest Africa" is struck by the low level of competence. Yet the obvious idea of using testing to select the more competent inhabitants for jobs is not mentioned. Yet the author is the same Klitgaard who elsewhere argues for the selective power of ability tests (1985, 1986). The reason an author could write a book that failed to even mention differential ability is that the subject is "politically incorrect," one that is not talked about in polite society.

Lynn and Vanhanen have not been deterred by political correctness

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from discussing geographical differences in ability (which are closely associated with the idea that the races differ in ability). This has permitted them to discuss a very plausible hypothesis explaining why some nations are rich and some nations are poor. The theory rather nicely integrates with the theory of why some people earn high wages and some earn low wages. Intelligence is rare in today's world and those possessing it earn higher wages than those lacking it. This theory also helps explain why regions and races within nations differ in income. Finally, this theory (along with differences in economic freedom) helps significantly to explain why some countries are rich and some poor.

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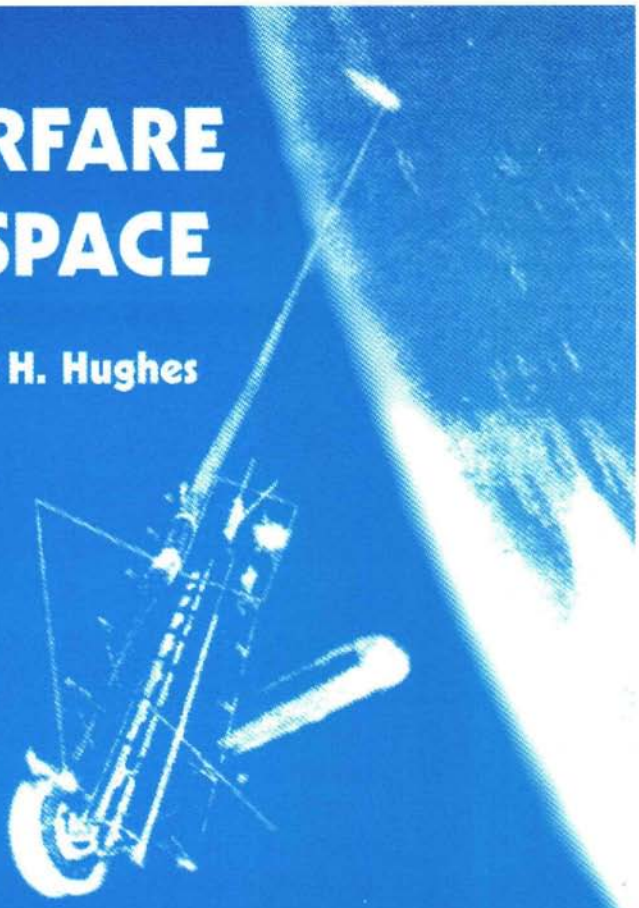

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